# Appendix C

# Social and Economic Impacts and Conceptual Relocation Study

# A SURVEY OF SOCIAL AND ECONOMIC IMPACTS INCLUDING A CONCEPTUAL STAGE RELOCATION STUDY FOR BUILD ALTERNATIVES B-1, B-2 and C

PROJECT NUMBER
MDOT #101633-001000

IMPROVEMENTS TO STATE ROUTE 15
TIPPAH COUNTY, MISSISSIPPI

PROJECT TERMINI:
COUNTY ROAD 312 TO THE TENNESSEE STATE LINE

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MISSISSIPPI DEPARTMENT OF TRANSPORTATION

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# 1.0 INTRODUCTION TO THE PROJECT

The Mississippi Department of Transportation (MDOT) proposes to improve a segment of State Route (SR) 15, from the intersection of County Route (CR) 312, approximately 2.4 miles south of US 72, to the Tennessee State Line in Tippah County, Mississippi. Three proposed alternatives are being carried forward in the National Environmental Policy Act (NEPA) process, a No-Build Alternative and three Build Alternatives referred to as Build Alternatives B-1, B-2, and C. Build Alternative B-1 involves providing four-lane and five-lane sections of roadway along existing SR 15. Build Alternative B-2 involves the improvements associated with B-1, but includes a new interchange at SR 72. Build Alternative C proposes bypassing the Town of Walnut, Mississippi to the west with a divided four-lane section. A project location map and a map depicting the No-Build Alternative (existing SR 15) and the three Build Alternatives are presented in Figures 1 and 2.

The project is proposed to be assisted with funding from the Federal Highway Administration (FHWA) and is subject to the requirements of the NEPA. This survey of the possible social and economic impacts of the project is intended to provide detailed support for the social and economic impacts sections of Chapter 3 of the NEPA Environmental Assessment.

## 1.1. Summary of Project Purpose and Need

The preliminary purpose of the proposed project is to:

1. Correct geometric deficiencies and improve safety for travelers and truck traffic through the area;
2. Address existing and future traffic needs, particularly as capacity needs will occur from the new Norfolk Southern rail yard that is under construction approximately 35 miles to the west of the project area;
3. Provide a linkage route between US 72 and Interstate 22 (US 78); and
4. Fulfill the legislative mandate to develop four-lane highways within the state as defined in the 1987 *Four-Lane Highway Program and the 2005 Vision 21.*

## 1.2. Alternatives Being Carried Forward in the NEPA Process

The No-Build Alternative and three Build Alternatives, B-1, B-2 and C, are being carried forward in the NEPA process. The No-Build Alternative involves leaving the segment of existing SR 15 in its current configuration. It involves no improvements to existing SR 15 in the project area aside from typical maintenance activity. As such, the No-Build Alternative would have no direct impacts to the community, economic climate or environment of the study area; however, it would also not fulfill the purpose and need of the proposed project.

Alternatives B-1 and B-2 both follow the existing SR 15 alignment; however, Alternative B-2 proposes a new interchange at the intersection of SR 15 and US 72. The interchange would be adjacent to and north of the existing intersection and would provide longer eastbound and westbound approaches onto US 72. Alternative B-1 would utilize the existing intersection of SR 15 and US 72 with improvements. Alternative C is a new location bypass

***Figure 1: Project Location***

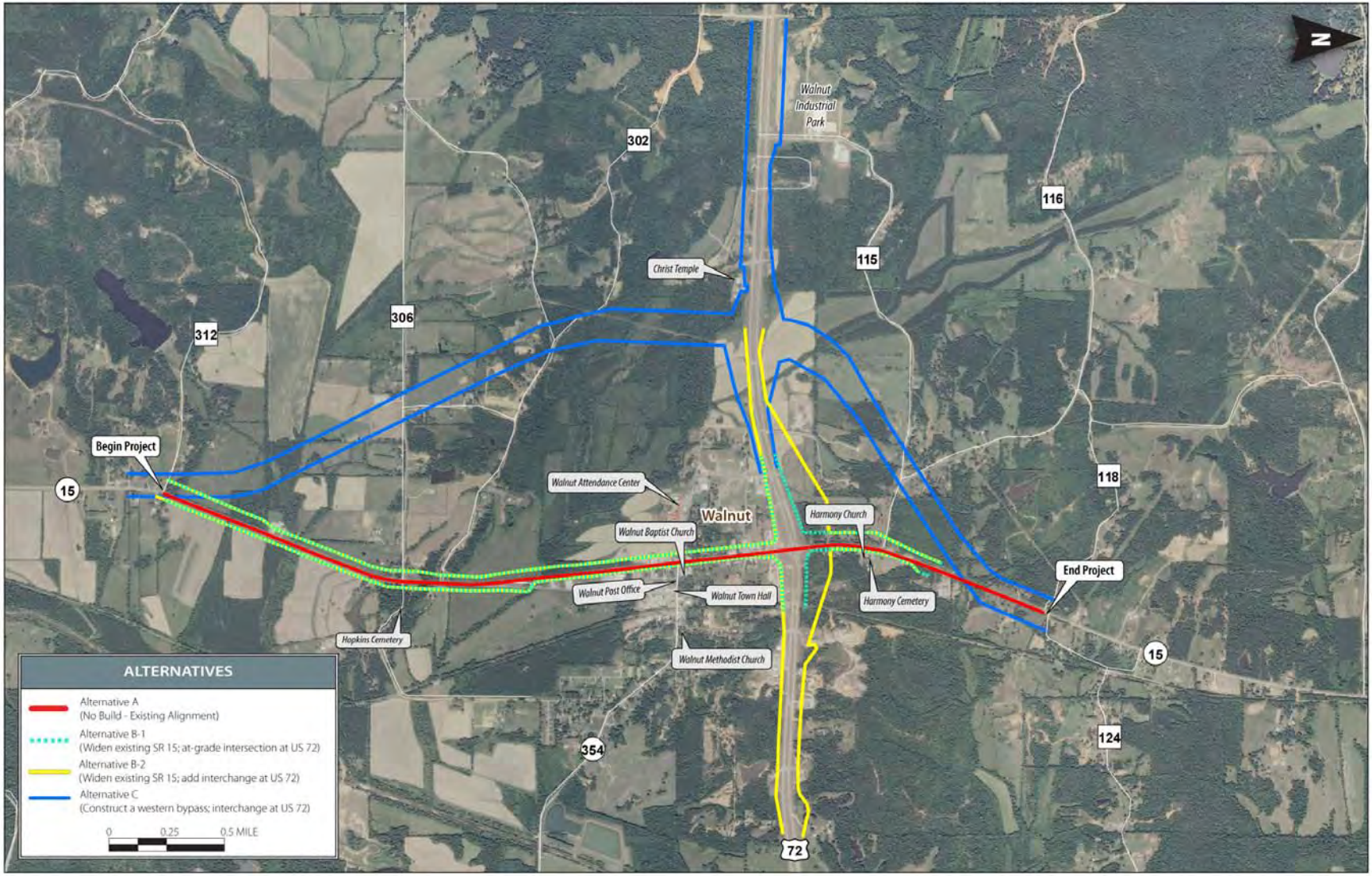



***Figure 2: Alternatives Being Carried Forward in the NEPA Process***

alignment to the west of the Town of Walnut. Alternative C begins just north of the Tennessee State line and follows the existing alignment of SR 15 to approximately the CR 118 and SR 15 intersection where it would then travel on new alignment southwest, intersecting SR 72 approximately west of Big Creek. It would then travel southeast to intersect with the existing SR 15 near the project terminus at the CR 312 intersection with SR 15. Refer back to Figure 2 for the locations of all the proposed Alternatives.

### 1.3 Study Methodology and Data Sources

Aerial photography, field visits and conversations with local planning officials were used to assess the impacts of the Build Alternatives to the areas neighborhoods and communities. Socio-economic data gathered from the US Census Bureau was analyzed to characterize the demographics of the corridors. Planners used aerial photography and conducted a visual survey to determine the number and character of displacements. An internet search of real estate sites and the online versions of local newspapers were used to assess the availability of replacement properties.

## 2.0 DESCRIPTION OF THE PROJECT AREA

The project area is located in Tippah County in northeast Mississippi. Improvements to SR 15 would begin near the vicinity of CR 312 in the south and will extend north to the Tennessee state line, a distance of approximately 5.5 miles. The project would make improvements on US 72 from just west of CR 302 to east of CR 277, a distance of approximately 1.9 miles. The project area is within and adjacent to the Town of Walnut, which is the northernmost town in Tippah County. As previously state, the study corridors for both Build Alternatives B-1 and B-2 involve widening existing SR 15 to four-lane and five-lane sections, and Build Alternative C proposes the construction of a western bypass to SR 15, at US 72 (refer back to Figure 2).

State Route 15 serves industrial and residential areas in Tippah County and also serves as a north/south corridor for commuters. The project area is located fourteen miles north of Ripley, the county seat of Tippah County. State Route 15 is a north-south, two-lane state highway that traverses most of the length of Mississippi. Its southernmost section starts in Biloxi, and its northernmost section crosses the Mississippi/Tennessee line just north of Walnut.

Tippah County had a population of 22,232 in 2010 and has experienced a 13.9 percent increase in population since 1990. The state of Mississippi experienced a 15.3 percent growth rate during the same period, indicating the relatively slower pace of growth in the project area. This growth is expected to continue with the development of a Norfolk Southern intermodal facility approximately 40 miles northwest of the study area in neighboring Fayette County, Tennessee. The region is within an hour and a half drive of two major universities, including the University of Mississippi and the University of Memphis.

### 2.1 Land Use and Community Facilities

The project area is comprised primarily of farmland and pastureland with scattered low-density, single-family residential, industrial properties, small businesses, government buildings, churches, and schools.

Four churches and two cemeteries are located within the vicinity of existing SR 15 and the proposed build alternatives. Within the Town of Walnut, two schools (Walnut Attendance Center and Walnut High School) and the Walnut Post Office are all located on Commerce Street/CR 354. The Walnut Town Hall and Library is located on the corner of Commerce Street/CR 354 and Main Street, just east of SR 15. The Walnut Fire and Rescue is located on SR 15, just south of its intersection with Willow Avenue. There are no planned community facilities located directly within any of the build alternatives. The locations of all community facilities in the general project area are shown in Figure 3.

The Walnut Industrial Park is located on US 72, to the west of the US 72/SR 15 intersection. This business park currently includes two warehouses for Abby Manufacturing. Highway commercial uses, such as gas stations, a Dollar General, an auto parts store, a Value Inn Motel and fast-food restaurants, are located at on south side of the US 72/SR 15 intersection. Community oriented businesses, such as a pharmacy and a bank, are located at the SR 15 intersection with Commerce Street/CR 354. Another industrial building, ThyssenKrupp, is located along SR 15, between Mitchell Avenue and Willow Avenue.

Tippah County does not have zoning, nor does it have a comprehensive plan or a land use plan. Consequently, it is difficult to anticipate how the project area will develop in the future. The lack of adequate infrastructure precludes large commercial/industrial developments from locating within many portions of the project study area. Unless basic infrastructure (e.g., water and sewer) is provided in the future outside of the commercial area of Walnut, it is likely the land uses within the project study area will remain as they are today (scattered residences that are rural in character).

## 2.2 Demographics

Table 1 outlines general population data from the 2010 US Census for Tippah County. The State of Mississippi is included for comparison purposes.

**Table 1: General Population Data**

| Location | 1990 | 2000 | 2010 | Percent Growth 1990-2010 |
|---|---|---|---|---|
| **Mississippi** | 2,573,216 | 2,844,658 | 2,967,297 | 15.3% |
| **Tippah County** | 19,523 | 20,826 | 22,232 | 13.9% |

*Source: US Census Bureau, 2010 Census Redistricting Data, Census 2000, 1990 Census*

The population of Tippah County has experienced slight growth over the past two decades. As Table 1 outlines, the County grew by 13.9 percent between 1990 and 2010, which is slightly less than the statewide growth of 15.3 percent when compared over the same period.

Table 2 contains demographic estimates for the study corridor, Tippah County and the State of Mississippi based on data from the 2010 US Census and American Community Survey 2006-2010 estimates. According to the Census information, minorities comprised 18.2 and 38.6 percent of the populations of Tippah County and the State of Mississippi, respectively. The percentage of the study corridor population identified as minority is lower than

***Figure 3: Existing Community Facilities***

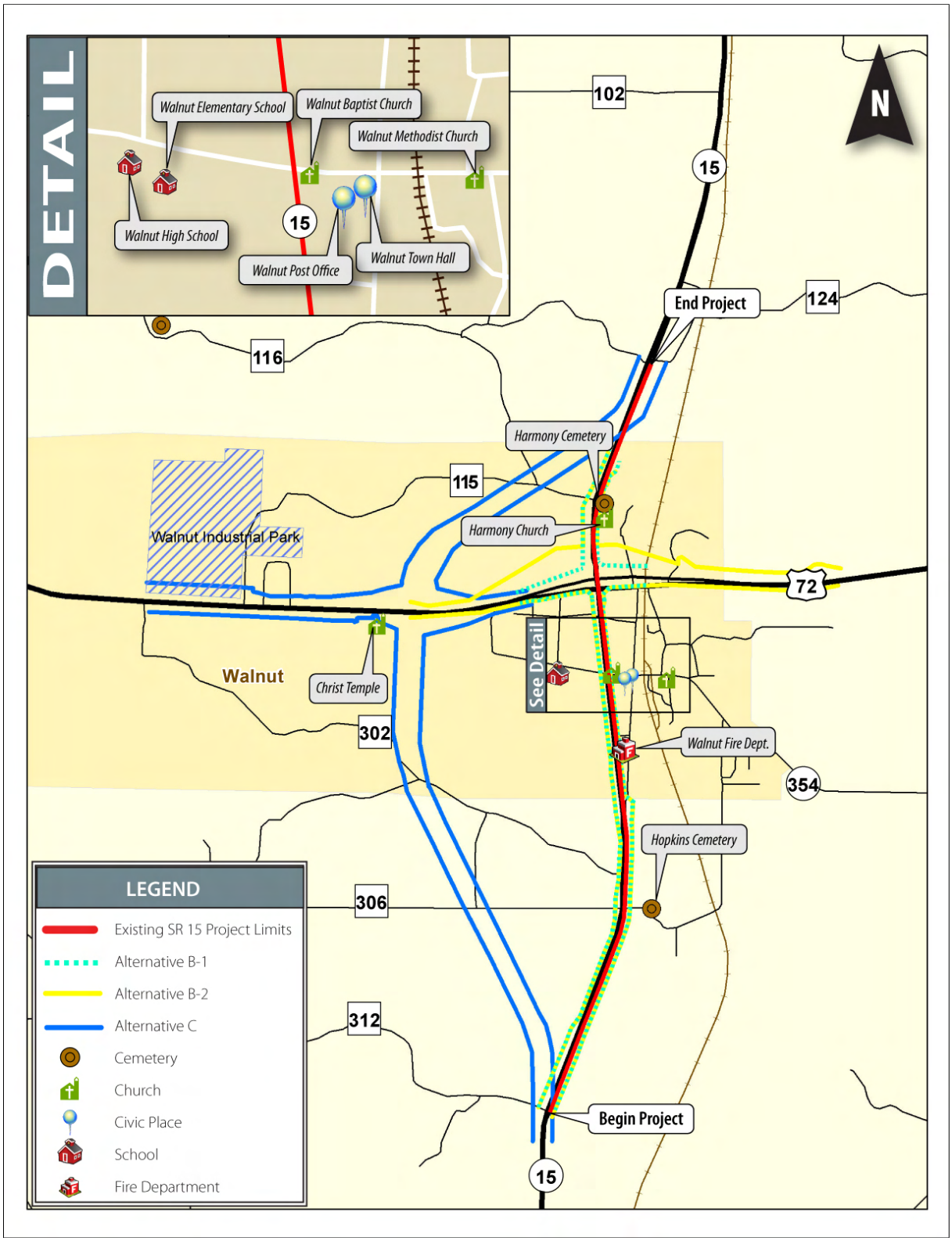


**Table 2: Demographic Estimates For The Study Corridor**

| Geographic Area | Total Population (2010) | Minority** | Under Age 18 | Over Age 65 | High School Graduates | Median Household Income - 2010 | Individuals Below Poverty Line -2010 |
|---|---|---|---|---|---|---|---|
| Study Corridor* | 5,052 | 13.5% | 74.6% | 14.8% | 70.4% | $33,667 | 23.5% |
| Tippah County | 20,826 | 18.2% | 25.0% | 14.5% | 80.4% | $29,300 | 16.9% |
| Mississippi | 2,844,658 | 38.6% | 30.7% | 12.0% | 72.9% | $31,330 | 19.9% |

*Source: US Census Bureau, Census 2010 and American Community Survey 2006-2010 Estimates*

** The "Study Corridor" is defined as Tippah County Census Tract 9501 as it encompasses existing SR 15 and Build Alternatives B-1, B-2, and C.*

*** Percent minority is based on race and defined as those persons who consider themselves to be a race other than 'White' (calculated by subtracting the white population from the total population).*

that of the county or state, at only 13.5 percent. The largest minority group (based on race) in the study corridors is the African American community, at 10.4 percent. Additionally, approximately 2.0 percent of the population within the study corridor is identified as Hispanic[1].

As Table 2 shows, the study corridor has a much larger percentage of the population under the age of 18 (74.6 percent) than that of the county (25 percent) or the state (30.7 percent). The percentage of the population over the age of 65 in the study corridor (14.8 percent) is comparable to that of the county (14.5 percent) and only slightly higher than that of the state (12.0 percent). The percentage of the population with a high school diploma in the study corridor (70.4 percent) is lower than that of both Tippah County (80.4 percent) and the state (72.9 percent).

Finally, the median household income for the study corridor ($33,667) is higher than that of Tippah County ($29,300) and the state ($31,330). Yet, the percentage of individuals living below the poverty line in the study corridor is higher (23.5 percent) than that of both the county (16.9 percent) and the state (19.9 percent).

## 2.3 Economics

Historically, manufacturing has been the county's largest industrial sector. Production, transportation, and materials transport occupations are the most common in Tippah County.

Norfolk Southern is currently building a $105 intermodal facility on 570 acres in Rossville, Tennessee. The facility will include a rail spur from the main line of Norfolk Southern to Tennessee 57, and an access road to US 72 in Mississippi. The proposed access to US 72 lies 35 miles to the west of the project area. Overall, the Norfolk Southern intermodal facility will serve as a key component of the railroad's Crescent Corridor, a 2,500-mile, $2.5 billion public-private rail network linking the southeastern and northeastern US and designed to take 1 million long-haul trucks off the road.

[1] According to the Population Division of the US Census Bureau, people of Hispanic origin may be of any race and are instructed to answer the question on race by marking one or more race categories shown on the questionnaire, including White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Some Other Race. Hispanics are asked to indicate their origin in the question on Hispanic origin, not in the question on race, because in the federal statistical system ethnic origin is considered to be a separate concept from race. (http://www.census.gov/population/www/socdemo/race/racefactcb.html)

There are three industrial parks in Tippah County: Walnut Industrial Park, North Ripley Industrial Park and Ripley Industrial Park. The Walnut Industrial Park is located on US 72, west of the US 72/SR 15 intersection. Its primary occupant, with approximately 90 employees, is Abby Manufacturing that manufactures ATV accessories. Further south on SR 15 is the North Ripley Industrial Park. The Ripley Industrial Park is located east of the SR 15 and SR 4 intersection approximately 0.5-mile off of SR 4.

According to the Tippah County Development Foundation, Tippah County's largest five employers include:

- Ashley Furniture – upholstered furniture (1,050 employees);
- Hill Brothers Construction – major construction company (700 employees);
- Thyssen-Krupp – elevator systems (230 employees);
- Ecowater – water filters (205 employees); and
- Hankins – wood products (150 employees).

According to the Mississippi Department of Employment Security, the unemployment rate in Tippah County for the December 2010 reporting period was 13.7 percent, compared to a 9.7 percent rate for Mississippi overall.

# 3.0 COMMUNITY AND ECONOMIC IMPACTS

## 3.1 Community Impacts

All three proposed build alternatives involve the Town of Walnut, an area with a strong sense of community identity. During public meetings residents of the area commented on the strength of the community and how it is dependent on the vitality of a number of businesses at the intersection of SR 15 and US 72. Adjustments to the proposed alignment of Build Alternative B-2 were made during the planning process to minimize these impacts; however, some impacts to the character of the Walnut community are likely to occur if this alternative is selected.

Both Build Alternatives B-1 and B-2 are adjacent to Harmony Church, Harmony Cemetery, Walnut Baptist Church and the Walnut Fire and Rescue, but they are not expected to be a barrier to social interaction, and community and social impacts are unlikely. Although the very western portion of Build Alternative C is adjacent to Christ Temple, church property and access to the church would not be impacted.

There are no foreseeable negative impacts to the Walnut Attendance Center or Walnut High School associated the build alternatives. Maintaining access to these schools, located on Commerce Street, is a priority, as the schools are major traffic generators for students, recreational field users, and football game attendees. The build alternatives would simply provide an enhanced corridor for local and truck traffic improving the safety of the existing SR 15. Additionally, the proposed project would improve response times for emergency vehicles in the area, increasing the overall safety of the community.

Business, farm and residential displacements are estimated for all three build alternatives. A detailed discussion occurs under the "Survey of Displacements" section later in this Appendix. In addition to the anticipated displacements, as with any major transportation project, it is likely that some residents of the corridor that are not displaced would experience temporary or minor impacts as a result of the construction and operation of the build alternative. These impacts are

expected to be short-term, construction-related impacts such as noise and alterations to access and traffic patterns.

The proposed build alternatives would improve commuter and local commerce travel on SR 15 and would improve regional commerce travel on US 72. The project may also assist the county in attracting new businesses and industry, such as industrial and manufacturing suppliers for the Walnut Industrial Park. Should that occur, an increase in population could occur, more and possibly higher paying jobs would be provided, and the income level of the population could go up.

## 3.2 Economic Impacts

The initial economic impact of any of the Build Alternatives is land being removed from the tax rolls through its acquisition for ROW particularly the businesses on the west side SR 15, south of its intersection with US 72. Should Build Alternatives B-1 or B-2 be selected as the preferred, it is anticipated that the amount of land to be acquired would be less; however, should Build Alternative C be selected the amount of ROW to be acquired would be more extensive as this is a new location alignment. The economic effect of a bypass under Build Alternative C varies with each circumstance. Smaller towns, such as Walnut, are generally more at risk of adverse economic impacts from a highway bypass than medium and larger towns because a bypass reduces through traffic and negatively impacts trade sales and employment. In general, the adverse impacts to existing services in the town could be offset in the long-term by the attraction of commercial development into the vicinity of the bypass area, and thus providing jobs to local residents. Regardless of which alternative is preferred, the injection of construction money into the local economy would also benefit the area.

Improved accessibility would likely increase the value of land and encourage new development in desired areas. Attracting more highway commercial uses and services, additional automobile suppliers, other manufacturing companies to the community would undoubtedly have a positive economic impact on Tippah County, as this would provide jobs to local residents who would, in turn, help to stimulate local businesses. Additionally, the injection of construction money into the local economy would further benefit the area.

Negative economic impacts are limited to those associated with the displacement and relocation of ten businesses that would occur with the construction of Build Alternative B-1, eleven businesses that would occur with the construction of Build Alternative B-2 and one business that would occur with the construction of Build Alternative C. As discussed in Section 3.4, suitable replacement properties are readily available within Tippah County; however, they may not be located within the Town of Walnut. It is also expected that the economic impacts of relocation costs are expected to be much more than the current assessed values of the displaced business properties.

## 3.3 Environmental Justice Impacts

This project is consistent with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, which requires federal agencies to develop a strategy for its programs, policies and activities to avoid disproportionately high and adverse impacts on minority and low-income populations with respect to human health and the environment.

A review of 2000 US Census data, interviews with local government officials and a field review of the study area were used to determine the impacts of the build alternatives on minority and low-income populations within the corridors. It should be noted that 2000 US Census data was

reviewed in evaluating environmental justice, as the 2010 US Census data has not been released for the project area. In addition, the 2006-2010 American Community Survey data only releases information down to the census tract level. In order to clearly determine if a disproportionate impact to a minority or low income group would occur, data at the block level needed to be examined. Based on the information gathered, it has been determined that this project would not have a disproportionately high and/or adverse effect on low-income or minority populations. Conversely, the improved transportation infrastructure supporting economic development and increased safety provided by the build alternatives would benefit all community members, regardless of race or income.

Minority Populations

The percentage of minority populations for the State of Mississippi in 2000 was 27.6. Tippah County was lower at 18.2 percent. There are four census tracts within Tippah County (9501, 9502, 9503, and 9504). The entirety of the project area lies within census tract 9501. The percentage of minority populations within census tract 9501 was 11.5. To see if this number represents a concentration of minorities, census data was researched to the block level.

As Figure 4 illustrates, of the 38 census blocks encompassing the project area, nine have a minority population percentage higher than Tippah County as a whole. These nine census blocks (1028, 1032, 1052, 2035, 2040, 2041, 2044, 2054, and 4009) are highlighted in Figure 4.

Build Alternative B-1 has three census blocks adjacent to its corridor with higher percentages of minorities than Tippah County.

- Block Group 1, Block 1032 – 50 percent (7 out of 14 persons)
- Block Group 2, Block 2054 – 44.4 percent (40 out of 90 persons)
- Block Group 4, Block 4009 – 35.3 percent (6 out of 17 persons)

Build Alternative B-2 has two census blocks adjacent to its corridor with a higher percentage of minorities than Tippah County.

- Block Group 1, Block 1028 - 73.3 percent (11 out of 15 persons)
- Block Group 1, Block 1052 - 50 percent (9 out of 18 persons).

Seven census blocks along the Build Alternative C corridor have higher percentages of minorities than Tippah County.

- Block Group 1, Block 1032 – 50 percent (7 out of 14 persons)
- Block Group 1, Block 1052 – 50 percent (9 out of 18 persons)
- Block Group 2, Block 2035 – 41.18 percent (28 out of 68 persons)
- Block Group 2, Block 2040 – 100 percent (9 out of 9 persons)
- Block Group 2, Block 2041 – 25 percent (5 out of 20 persons)
- Block Group 2, Block 2044 – 22.22 percent (8 out of 36 persons)
- Block Group 2, Block 2054 – 44.44 percent (40 out of 90 persons)

Three smaller blocks in the Build Alternative C corridor, Blocks 1032, Block 1052 and Block 2040, have significantly higher percentages of minorities at 50, 50 and 100 percent, respectively. Despite the high percentages, the number of persons in each of these blocks is relatively small compared to the land area of the blocks; thus, these areas are not considered ‘concentrations’. A total of 14 people resided in Block 1032, 18 persons resided in Block 1052 and only nine resided in Block 2040. Block 2054 has a higher population with 90 people:

however, this block is located at the very southern portion of the project, and the majority of the residents in this block reside to the west of the terminus of the project.

The median annual household income in Tippah County (based on 1999 income figures) is $29,300 with 16.9 percent of the county's residents living below the poverty line. Of the two block groups encompassing the three build alternatives, one block group has a higher percentage of the population living below poverty level than that of the county as a whole. This is Block Group 1 of Census Tract 9501, with 25.14 percent living below poverty (371 of 1,476 persons). The location of this Block Group in relation to the study corridors is displayed in Figure 5.

Based on the information gathered, it has been determined that this project would not have a disproportionately high and/or adverse effect on low-income or minority populations. Conversely, the improved transportation infrastructure supporting economic development and increased safety provided by the build alternatives would benefit all community members, regardless of race or income

While some temporary impacts are associated with construction expected in the project area, all residents will bear these impacts equally. Furthermore, it is intended that all people living in the project area, regardless of race or economic status, would share equally in the benefits of the proposed project such as decreased emergency response times, safer roadways and economic development. Based on these findings, there is no evidence that minority or low-income populations in the study would bear any disproportionately high or adverse effects as a result of the proposed project pursuant to Executive Order 12898.

***Figure 4: Minority Population by US Census Block***

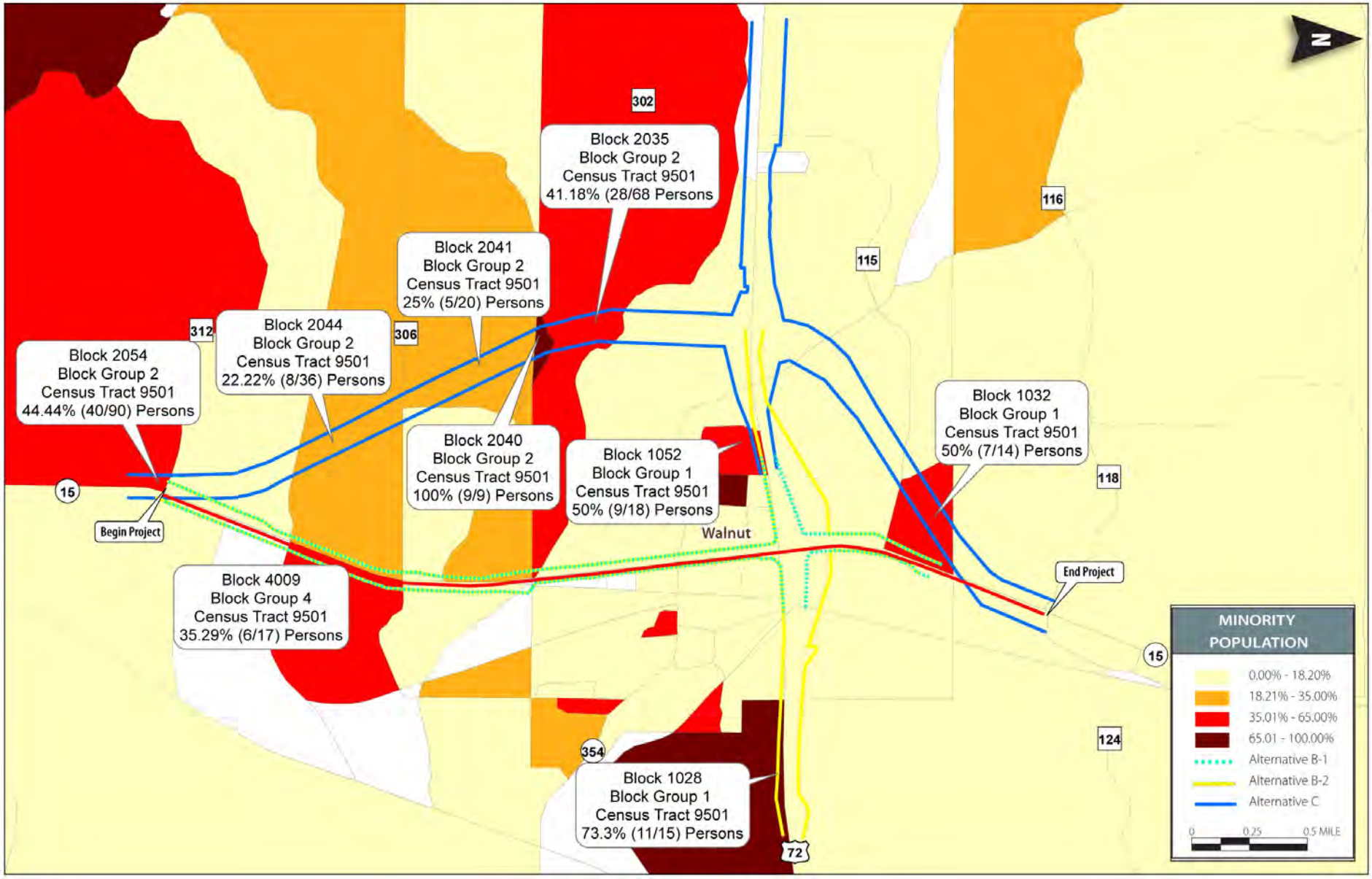
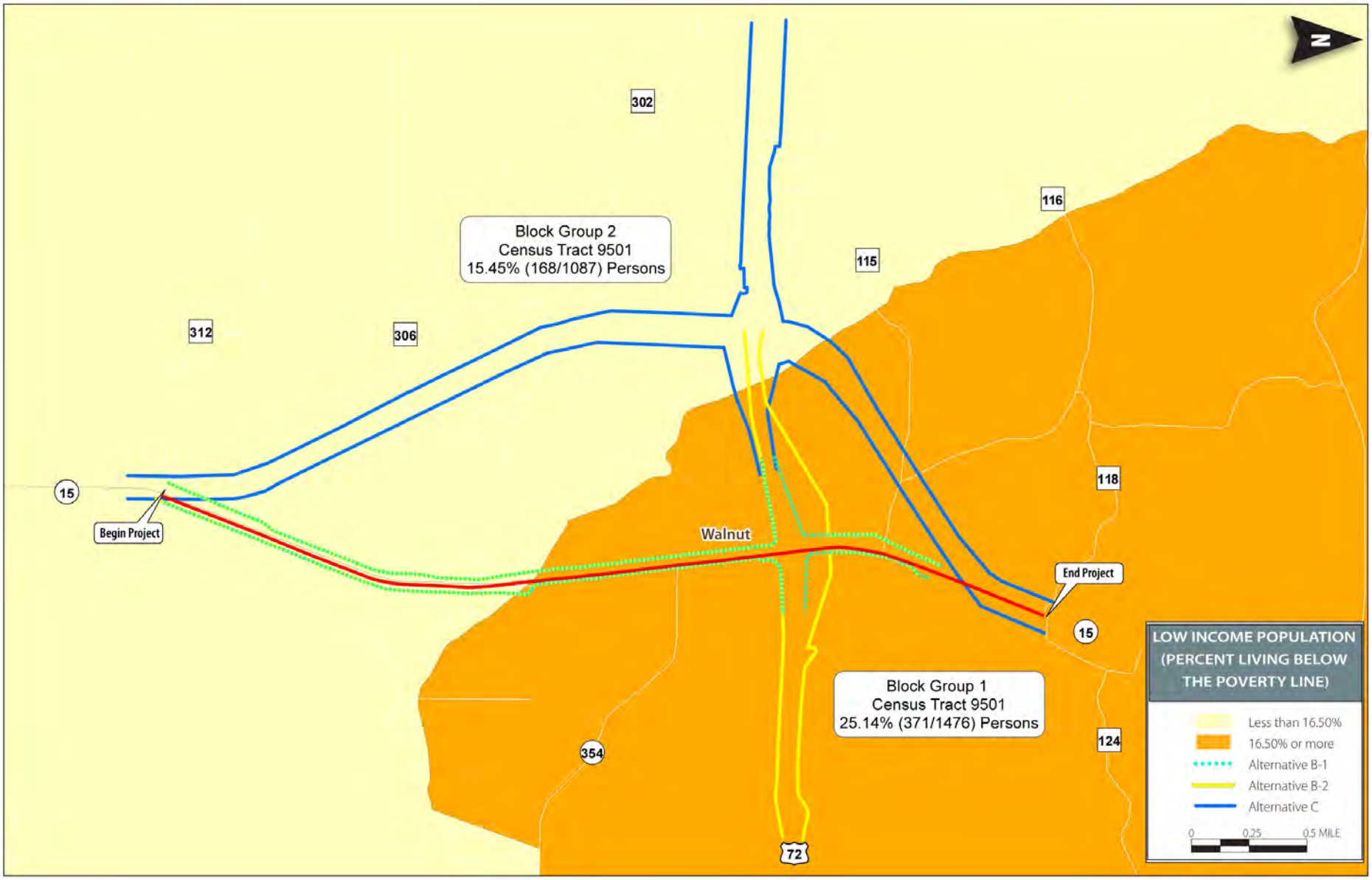


***Figure 5: Low-Income Population by US Census Block Group***



# 4.0 SURVEY OF DISPLACEMENTS

This section is intended to be a conceptual stage relocation plan for the purpose of evaluating impacts from the proposed conceptual alignments of the Build Alternatives. Each of the Build Alternatives has been designed to avoid and minimize displacement of residences, farms and businesses to the extent feasible. Changes to the proposed alignments were introduced to minimize displacements and impacts to communities.

To evaluate the impacts, potential relocations were identified through a review of aerial photography and field investigations, as well as reviewing Tippah County Tax Assessor records and census data. Field investigations focused on documenting the demographic characteristics of the community and verifying the type of structure within the proposed Build Alternative. Tippah County Tax Assessor records were used to document the approximate square feet (sf), age, condition and total assessment value of the potential displaced properties.

This survey is considered conceptual in nature. More detailed information on these properties would need to be obtained should the relocation study move beyond the conceptual stage. In addition, actual relocations will be determined in the design phase of the project and may vary in some instances from the results contained herein. Relocation impacts will be minimized to the greatest extent possible during each phase of the project.

Potential residential, mobile home and business displacements that could occur as a result of the proposed project have been assessed for each of the proposed alternatives. Because the No Build Alternative does not involve any improvements to the existing roadway other than regularly scheduled maintenance, no displacements are anticipated.

Table 3 provides a summary of potential displacements for the Build Alternatives. Relocation of residences, mobile homes and businesses are unavoidable under all of the proposed Build Alternatives. Using Tippah County 2011 Tax Assessor information, Table 4 outlines characteristics of the potentially displaced dwellings, including average square feet of residences or businesses, average age and average total assessment values.

**Table 3: Summary of Displacements**

| Type | Number of Potential Displacements | | |
|---|---|---|---|
| | **Alternative B-1** | **Alternative B-2** | **Alternative C** |
| Residence (frame, brick or siding) | 11 | 12 | 10 |
| Residence (mobile home) | 0 | 0 | 5 |
| Business | 10 | 11 | 1 |

**Table 4: Characteristics of Displacement Dwellings**

| Alternative | Type of Construction | # of Dwellings | Average Area of Residence/Business | | | Average Age of Dwellings | | | Average Total Assess-ment Value |
|---|---|---|---|---|---|---|---|---|---|
| | | | Less than 1,000 sf | 1,000 to 2,000 sf | More than 2,000 sf | Less than 10 years | 10 to 25 years | More than 25 years | |
| Alternative B-1 | Residential (Frame/Brick/ Siding) | 11 | 2 | 9 | 0 | 0 | 0 | 11 | $54,436 |
| | Residential (Mobile Home) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| | Business | 10 | 1 | 3 | 6 | 0 | 5 | 5 | $221,581 |
| Alternative B-2 | Residential (Frame/Brick/ Siding) | 12 | 2 | 9 | 1 | 0 | 0 | 12 | $56,339 |
| | Residential (Mobile Home) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| | Business | 11 | 1 | 4 | 6 | 0 | 6 | 5 | $198,329 |
| Alternative C | Residential (Frame/Brick/ Siding) | 9 | 2 | 3 | 4 | 1 | 6 | 2 | $65,205 |
| | Residential (Mobile Home) | 5 | | | | | | | $52,710 |
| | Business | 1 | 0 | 1 | 0 | 0 | 0 | 1 | $25,550 |

*Source: Tippah County Mississippi 2011 Tax Assessor*

Build Alternative B-1 would result in the displacement of 11 brick, frame or vinyl siding residence, no mobile homes, and 10 businesses, for a total of 21 displacements. Table 5 provides detailed information on the residences and businesses identified for relocation under Build Alternative B-1. Alternative B-1 business relocates include Phillips 66, Shopezy, Auto Plus Walnut Parts Company, the Wildcat Carwash and mini storage, the Country Music Place, the BBQ Man on Wheels, Treesap Medical Center, Duncan's Pharmacy, and CB&S Bank.

Build Alternative B-2 would result in the displacement of 12 brick, frame or vinyl siding residences, no mobile homes, and 11 businesses, for a total of 23 displacements. Table 6 provides detailed information on the residences and businesses identified for relocation under Build Alternative B-2. Alternative B-2 business relocates include Phillips 66, Shopezy, Auto Plus Walnut Parts Company, the Wildcat Carwash and mini storage, the Country Music Place, the BBQ Man on Wheels, Treesap Medical Center, Duncan's Pharmacy, and CB&S Bank and a business warehouse located at 7291 Highway 72.

Build Alternative C would result in the displacement of 10 brick, frame or vinyl siding residences, five mobile homes and one business, for a total of 16 displacements. Table 7 provides detailed information on the residences and businesses identified for relocation under Build Alternative C. O'dalays Taco Shack is the only business that would need to be relocated under Alternative C.

**Table 5: Potential Displacements under Alternative B-1**

| | | | | | | Average Age of Dwellings | | | Condition of Dwellings | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parcel ID | Type of Structure | Total Assessment Value | Acreage | Sq ft of Bldg | Type of Construction | Less than 10 years | 10 to 25 Years | More than 25 Years | Good | Average | Poor |
| 1-324-08-013.00 | Residential home | $50,310 | 2.00 | 1421 | Brick | | | X | | X | |
| 1-324-08-006.00 | Residential home | $54,660 | 6.20 | 1575 | Brick | | | X | | X | |
| 1-324-05-011.07 | Residential home | $98,800 | 1.67 | 1921 | Brick | | | X | X | | |
| 5-324B-05-003.00 | Residential home | $51,500 | 70.56 | 1411 | Brick | | | X | | | X |
| 5-914Q-32-050.00 | Residential home | $54,150 | 1.00 | 1438 | Brick | | | X | | X | |
| 5-914Q-32-051.00 | Residential home | $50,050 | 1.00 | 1317 | Alum siding | | | X | | X | |
| 5-914Q-32-052.00 | Residential home | $64,300 | Less than | 1853 | Vinyl Siding | | | X | | X | |
| 5-914Q-32-053.00 | Residential home | $54,580 | Less than | 1654 | Brick | | | X | | X | |
| 5-914Q-32-054.00 | Residential home | $29,380 | Less than | 996 | Drywall | | | X | | X | |
| 5-914Q-32-059.00 | Residential home | $76,040 | 1.25 | 795 | Brick | | | X | | X | |
| 5-914Q-32-003.00 | Residential home | $44,550 | 3.76 | 1184 | Frame | | | X | | X | |
| 5-324B-05-003.04 | Business - bank | $363,700 | 1.07 | 2604 | Brick | | | X | | X | |
| 5-914Q-32-047.02 | Business - Duncan's Pharmacy | $125,800 | Less than | 2742 | Log | | | X | | | X |
| 5-914Q-32-061.00 | Businesses - Country Music Place, storage shed and the BBQ Man on Wheels | $119,160 | Less than 1 | 768 sf car wash, 4500 sf storage shed, restaurant 1200 sf | Corrugated metal | | X | | | | X |
| 5-914Q-32-034.01 | Business - Auto Plus Walnut Parts Co. | $156,270 | Less than 1 | 2501 sf shop 1, 3600 sf shop 2 | Corrugated metal | | | X | | | X |
| 5-914Q-32-030.00 | Business - store and warehouse | $274,920 | 1.15 | 10000 store, 1240 warehouse | Corrugated metal | | X | | | | X |
| 5-914Q-32-029.01 | Business - Phillips 66 | $448,000 | 1.94 | 3436 sf store, 4164 sf canopy | Stucco | | | X | | X | X |
| 5-914Q-32-034.01 | Businesses - mini storage and Wildcat Car Wash | $215,040 | 0.99 | Mini storage buildings at 3,600 sf and 2860 sf; car wash 1628 sf | metal mini storage; brick car wash | | X | | | X | |
| 5-914Q-32-047.00 | Business - Treesap Medical Center Inc. | $69,760 | 1.00 | 1514 | Vinyl Siding | | | | X | | X |

**Table 6: Potential Displacements under Alternative B-2**

| | | | | | | Average Age of Dwellings | | | Condition of Dwellings | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parcel ID | Type of Structure | Total Assessment Value | Acreage | Sq ft of Bldg | Type of Construction | Less than 10 years | 10 to 25 Years | More than 25 Years | Good | Average | Poor |
| 1-324-08-013.00 | Residential home | $50,310 | 2.00 | 1421 | Brick | | | X | | X | |
| 1-324-08-006.00 | Residential home | $54,660 | 6.20 | 1575 | Brick | | | X | | X | |
| 1-324-05-011.07 | Residential home | $98,800 | 1.67 | 1921 | Brick | | | X | X | | |
| 5-324B-05-003.00 | Residential home | $51,500 | 70.56 | 1411 | Brick | | | X | | | X |
| 5-914Q-32-050.00 | Residential home | $54,150 | 1.00 | 1438 | Brick | | | X | | X | |
| 5-914Q-32-051.00 | Residential home | $50,050 | 1.00 | 1317 | Alum siding | | | X | | X | |
| 5-914Q-32-052.00 | Residential home | $64,300 | Less than 1 | 1853 | Vinyl Siding | | | X | | X | |
| 5-914Q-32-053.00 | Residential home | $54,580 | Less than 1 | 1654 | Brick | | | X | | X | |
| 5-914Q-32-054.00 | Residential home | $29,380 | Less than 1 | 996 | Drywall | | | X | | X | |
| 5-914Q-32-059.00 | Residential home | $76,040 | 1.25 | 795 | Brick | | | X | | X | |
| 5-914K-32-013.00 | Residential home | $79,180 | Less than 1 | 2102 | brick | | | X | | X | |
| 5-914Q-32-003.00 | Residential home | $44,550 | 3.76 | 1184 | | | | X | | X | |
| 5-324B-05-003.04 | Business - bank | $363,700 | 1.07 | 2604 | Brick | | | X | | X | |
| 5-914Q-32-047.02 | Business - Duncan's Pharmacy | $125,800 | Less than 1 | 2742 | Log | | | X | | | X |
| 5-914Q-32-061.00 | Businesses - Country Music Place, storage shed and the BBQ Man on Wheels | $119,160 | Less than 1 | 768 sf car wash, 4500 sf storage shed, restaurant 1200 sf | Corrugated metal | | X | | | | X |
| 5-914Q-32-034.01 | Business - Auto Plus Walnut Parts Co. | $156,270 | Less than 1 | 3600 sf | Corrugated metal | | | X | | | X |
| 5-914Q-32-030.00 | Business - Shopezy store | $274,920 | 1.15 | 10000 store, 1240 warehouse | Corrugated metal | | X | | | | X |
| 5-914Q-32-029.01 | Business - Phillips 66 | $448,000 | 1.94 | 3436 sf store, 4164 sf canopy | Stucco | | | X | | X | X |
| 5-914Q-32-034.01 | Businesses - mini storage and Wildcat Car Wash | $215,040 | 0.99 | Mini storage buildings at 3,600 sf and 2860 sf; car wash 1628 sf | metal mini storage; brick car wash | | X | | | X | |
| 5-914Q-32-047.00 | Business - Treesap Medical Center Inc. | $69,760 | 1.00 | 1514 | Vinyl Siding | | | X | X | | X |
| 5-914K-32-003.01 | Business - warehouse | $12,310 | 2.17 | 1200 | | | X | | | X | |

**Table 7: Potential Displacements under Alternative C**

| | | | | | | Average Age of Dwellings | | | Condition of Dwellings | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parcel ID | Type of Structure | Total Assessment Value | Acreage | Sq ft of Bldg | Type of Construction | Less than 10 years | 10 to 25 Years | More than 25 Years | Good | Average | Poor |
| 1-324-08-013.00 | Residential Home | $50,310 | 2.00 | 1,421 | Brick | | | X | | X | |
| 1-324-08-016.01 | Residential Home | $117,770 | 33.00 | 3,057 | Brick | | X | | X | | |
| 5-914-31-010.00 | Residential Home | $32,310 | 0.46 | 1,188 | Brick | | | X | | X | |
| 5-914-31-001.00 | Residential Home | $62,670 | 1.64 | 2,070 | Vinyl Siding | | X | | | X | |
| 5-914K-32-006.00 | Residential Home | $60,010 | 6.84 | 1,296 | Brick | | | X | | X | |
| 5-914K-32-002.00 | Residential Home | $62,100 | 2.00 | 1,616 | Frame | | X | | | X | |
| 5-914K-32-001.00 | Residential Home | $13,290 | 1.00 | 700 | Frame | | X | | | X | |
| 5-914K-32-004.00 | Residential Home | $52,170 | 1.70 | 528 | Vinyl Siding | | X | | | X | |
| 5-914K-32-009.02 | Residential Home | $117,480 | 3.72 | 2,166 | Brick | | X | | X | | |
| 5-914K-32-008.00 | Residential Home | $133,640 | 20.60 | 2,060 | Brick | X | | | X | | |
| 1-324-08-020.00 | Mobile Home | $44,200 | 1.00 | 1,264 | Mobile Home | X | | | X | | |
| 1-324-06-015.00 | Mobile Home | $16,470 | 3.00 | 1,120 | Mobile home | | X | | | X | |
| 1-914-29-024.00 | Mobile Home | $21,670 | 5.43 | 1,568 | Mobile home | X | | | | | |
| 5-914-31-011.02 | Mobile Home | $36,380 | 45.15 | 1,568 | Mobile home | | X | | X | | |
| 1-324-08-010.00 | Mobile Home | $144,830 | 15.00 | 3,120 | Mobile home | X | | | X | | |
| 5-914-31-008.00 | Business - O'dalays Taco Shack | $25,550 | 4.00 | 1,344 | Brick | | | X | | | X |

Two of the residences anticipated to be displaced by Build Alternative B-1 and Build Alternative B-2 are currently for sale. These homes for sale are located at 28751 SR 15 and 28697 SR 15, in the northern vicinity of the SR 15 intersection with US 72.

Field investigations also attempted to estimate the demographic characteristics of the potential residential displacements. No individuals were actually observed entering or leaving any of the potentially displaced residences. Thus, it is not possible to confirm the presence of elderly or minority displacements that may occur. The displacement of Treesap Medical Center and Duncan's Pharmacy could have impacts to long-term residents, persons with disabilities and elderly persons within the community. Residents with mobility limitations, such as persons with disabilities and low income individuals, may find it difficult to meet daily needs due to the loss of facilities and services they depend on. Treesap Medical Center is one of three doctor's offices in Walnut and Duncan Pharmacy is the only Pharmacy in Walnut. The nearest pharmacy is in Ripley approximately 16 miles to the south. There is one commercial structure with 4.76 acres and one 14 acre commercial property, both available for development. It might be beneficial to consider constructing replacement buildings for these two facilities prior to the demolition of their being displaced, in order to reduce the disruption caused by relocation.

Among the nine 2000 Census Blocks with percentages of minorities higher than 18.20 percent (or having minority populations higher than Tippah County as a whole), potentially displaced residences were within two of those Census Blocks along Build Alternatives B-1 and B-2, and were within four of the Census Blocks along Build Alternative C. The majority of the displaced structures under all three Build Alternatives reside within Census Tract 9501, Block Group 1, which has a low income population of 25.14 percent, 8.24 percent higher than Tippah County as a whole. More detailed information than is available at this conceptual stage will be needed to determine whether these residences actually house minorities and low income individuals who may be potentially displaced by the project under the Build Alternatives.

## 5.0 REPLACEMENT PROPERTY SURVEY

A survey of internet real estate listings was completed to determine the availability of replacement properties. The survey was limited to listings in Tippah County, particularly in the communities of Walnut, Falkner, and Ripley as well as the rural areas close to the existing SR 15 corridor.

Residential dwellings identified for relocation are single-family homes and considered to be owner-occupied. The survey of internet real estate listings for residential homes for sale in December 2011 resulted in 30 listings, averaging 2120 square feet, 3.36 bedrooms and an average selling price of $145,260.00. The results of this residential survey are displayed in Table 8. The majority of homes available is between 1,000 and 2,000 SF, have 3 bedrooms, are in good condition, were built within the last 10 to 25 years, and are less than $119,500. Overall, the survey indicates that comparable homes are available for sale in the project area at the current time, and there should be enough homes available for sale to absorb the need of up to 12 residential displacements. Some of the homes for sale are more expensive and have much larger square footages than the displaced properties.

A number of mobile homes were identified in the study. Build Alternative C would result in three mobile home displacements. Some of the mobile homes are on large enough lots that they

**Table 8: Available Residential Replacement Properties in the Project Area**

| Location | sf | # of Bedrooms | State of Repair | Average Age | Selling Price | Acreage |
|---|---|---|---|---|---|---|
| Blue Mtn | 1,896 | 5 | Fair | Less than 10 years | $31,500 | |
| Walnut | 1,120 | 2 | Fair | 10-25 years | $37,750 | 0.16 |
| Walnut | 1,120 | 2 | Fair | 10-25 years | $37,750 | |
| Ripley | 2,128 | 4 | Fair | 10-25 years | $43,900 | |
| Falkner | 1,120 | 3 | Fair | Greater than 25 years | $44,300 | |
| Falkner | 1,120 | 3 | Fair/Good | Less than 10 years | $44,300 | |
| Falkner | 1,092 | 3 | Fair | Greater than 25 years | $48,000 | |
| Walnut | 1,131 | 3 | Fair | Greater than 25 years | $55,000 | 0.5 |
| Walnut | 1,131 | 3 | Fair/Good | Greater than 25 years | $55,000 | |
| Ripley | 1,248 | 3 | Fair | Greater than 25 years | $59,000 | 0.31 |
| Ripley | 1,624 | 3 | Fair/Good | 10-25 years | $69,500 | |
| Blue Mtn | 1,810 | 2 | Fair | Greater than 25 years | $85,000 | 0.4 |
| Ripley | 2,128 | 5 | Fair/Good | Less than 10 years | $85,000 | |
| Ripley | 1,700 | 3 | Good | 10-25 years | $89,000 | |
| Ripley | 1,500 | 3 | Fair/Good | 10-25 years | $99,000 | 2.6 |
| Walnut | 1,500 | 3 | Fair/Good | 10-25 years | $99,000 | 2.5 |
| Walnut | 1,700 | 3 | Good | 10-25 years | $119,500 | |
| Walnut | 1,700 | 3 | Good | 10-25 years | $119,500 | |
| Ripley | 3,400 | 3 | Good | 10-25 years | $129,000 | |
| Walnut | 2,300 | 3 | Good | Less than 10 years | $149,700 | |
| Walnut | 2,300 | 3 | Good | Less than 10 years | $149,700 | |
| Ripley | 2,200 | 4 | Good | 10-25 years | $159,900 | |
| Walnut | 2,773 | 5 | Good | 10-25 years | $225,000 | |
| Walnut | 2,773 | 5 | Good | 10-25 years | $225,500 | |
| Ripley | 3,152 | 4 | Good | Greater than 25 years | $265,000 | |
| Ripley | 1,040 | 3 | Good | Greater than 25 years | $279,000 | |
| Falkner | 3,552 | 4 | Good | 10-25 years | $284,000 | 4.9 |
| Walnut | 2,496 | 3 | Good | 10-25 years | $285,000 | |
| Ripley | 5,834 | 4 | Good | Less than 10 years | $419,000 | |
| Falkner | 5,000 | 4 | Good | Less than 10 years | $565,000 | |

**Source: www.landwatch.com and http://homes.point2.com/US/Mississippi/Tippah-County-Real-Estate.aspx**

might be relocated to unaffected portions of the property. A formal determination will be made during the right of way (ROW) phase as to the acquisition and/or relocation of the mobile homes. Mobile home dealerships are located in the Ripley area and there are no restrictions on the placement of mobile homes within Tippah County other than Health Department and Department of Environmental Quality requirements for the presence and location of wells and septic systems. A survey of vacant lots and acreage for sale was also conducted to determine whether ample replacement lots for mobile homes are available should any of those residences be displaced. The results of the survey of vacant lots and acreage for sale are displayed in Table 9. Five of the vacant lots for sale were less than four acres.

The number of businesses requiring relocation under the Build Alternatives ranges from one (Build Alternative C) to 11 (Build Alternative B-2). Table 10 lists nine of the commercial property locations currently for sale that may be suitable for the relocation of displaced businesses. Most of the commercial properties are located in Ripley, and cost more than $285,000.

Final determination as to the displacement of any residence will be made at the ROW stage. The relocation program will provide such services in accordance with Federal Uniform Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act). The Uniform Act requires that relocation assistance be made available to all displaced persons without discrimination. The acquiring agency's relocation program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do business. One or more relocation assistance officers will be assigned to the project, and each displaced person will be contacted individually and informed of their rights and benefits, which may be available through the Relocation Assistance Program.

When comparable housing is not available and cannot otherwise be made available, other options will be implemented. These options include the rehabilitation of, or additions to, existing dwellings to meet decent, safe, and sanitary requirements provided the cost of acquisition and or rehabilitation does not exceed the estimated cost of constructing a new comparable dwelling that meets decent, safe, and sanitary requirements. Other options include rehabilitation of dwellings purchased by the agency for right-of-way purposes, and construction of new dwellings. If the above options are not viable, Last Resort Housing will be implemented. Last Resort Housing is a program used if comparable housing is not available, or when it is unavailable within the relocatee's financial means and the replacement payment exceeds the federal/state legal limit.

***Table 9: Available Vacant Lots and Land for Sale in the Project Area (for Mobile Home Relocations)***

| Location | Selling Price | Acreage |
|---|---|---|
| Ripley | $11,000 | 0.25 |
| Ripley | $29,000 | 2.05 |
| Ripley | $19,900 | 2.8 |
| Ripley | $12,000 | 3.21 |
| Ripley | $428,000 | 3.26 |
| Ripley | $40,000 | 8.1 |
| Ripley | $76,000 | 8.65 |
| Ripley | $239,000 | 12 |
| Walnut | $869,000 | 14 |
| Falkner | $35,000 | 17 |
| Falkner | $19,000 | 19 |
| Falkner | $35,000 | 19.756 |
| Walnut | $285,000 | 36 |
| Ripley | $45,000 | 40 |
| Ripley | $92,000 | 46.65 |
| Tippersville | $138,000 | 64.7 |
| Walnut | $345,000 | 93 |
| Ripley | $235,600 | 124 |
| Ripley | $148,000 | 148 |

Source: www.landwatch.com and http://homes.point2.com/US/Mississippi/Tippah-County-Real-Estate.aspx

**Table 10: Available Commercial Properties for Sale in the Project Area**

| Location | SF | State of Repair | Average Age | Selling Price | Acreage |
|---|---|---|---|---|---|
| Ripley | 2,300 | Fair/Good | | $85,000 | |
| Ripley | 1,240 | Fair | 10-25 years | $90,000 | |
| Walnut | | Good | Greater than 25 years | $99,000 | 4.76 |
| Ripley | Lot | | | $289,000 | 2.97 |
| Ripley | 7,000 | | 10-25 years | $299,000 | 0.8 |
| Ripley | Lot | | | $359,000 | 2.97 |
| Ripley | 6,384 | Good | Less than 10 years | $459,000 | 0.09 |
| Ripley | 1,200 | | 10-25 yrs | $688,000 | |
| Walnut | Lot | | | $869,000 | 14 |

Source: www.landwatch.com and http://homes.point2.com/US/Mississippi/Tippah-County-Real-Estate.aspx

# Appendix D

# Farmland Coordination

Note: Coordination was completed for SR 15 from CR 312 to Mississippi/Tennessee State Line

U.S. DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service

NRCS-CPA-106

(Rev. 1-91)

# FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

| PART I (To be completed by Federal Agency) | 3. Date of Land Evaluation Request: 10/24/2011 | 4. Sheet 1 of 2 |
|---|---|---|
| 1. Name of Project: Reconstruction of SR 15 from CR 312 to TN/MS State Line, Walnut, Tippah County, MS | 5. Federal Agency Involved: Federal Highway Administration | |
| 2. Type of Project: Widening of existing SR 15 or construction of a new SR 15 Bypass | 6. County and State: Tippah County, MS | |

| PART II (To be completed by NRCS) | 1. Date Request Received by NRCS | 2. Person Completing Form: PAUL LOWERY |
|---|---|---|
| YES NO 3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). ☐☐ B1,B2 No Farmland, C has Farmland | | 4. Acres Irrigated Average Farm Size: N/A |
| 5. Major Crop(s): Soybeans | 6. Farmable Land in Government Jurisdiction Acres: 98639 % 33.2 | 7. Amount of Farmland As Defined in FPPA Acres: 25.6 % |
| 8. Name Of Land Evaluation System Used: LESA | 9. Name of Local Site Assessment System: None | 10. Date Land Evaluation Returned by NRCS: 11-21-11 |

| PART III (To be completed by Federal Agency) | Alternative Corridor For Segment | | | |
|---|---|---|---|---|
| | Alternative B-1 | Alternative B-2 | Alternative C | |
| A. Total Acres To Be Converted Directly | 29.22 | 45.77 | 108.61 | |
| B. Total Acres To Be Converted Indirectly, Or To Receive Services | 0 | 0 | 6.66 | |
| C. Total Acres In Corridor | 311.14 | 420.20 | 572.66 | |
| **PART IV (To be completed by NRCS) Land Evaluation Information** | | | | |
| A. Total Acres Prime And Unique Farmland | 0 | 0 | 21.69 | |
| B. Total Acres Statewide And Local Important Farmland | 0 | 0 | 0 | |
| C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted | 0 | 0 | 0.03 | |
| D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value | — | — | 36.8 | |
| **PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)** | — | — | 72 | |

| PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c)) | Maximum Points | | | | |
|---|---|---|---|---|---|
| 1. Area in Nonurban Use | 15 | 15 | 15 | 15 | |
| 2. Perimeter in Nonurban Use | 10 | 10 | 10 | 10 | |
| 3. Percent Of Corridor Being Farmed | 20 | 0 | 0 | 0 | |
| 4. Protection Provided By State And Local Government | 20 | 0 | 20 | 20 | |
| 5. Size of Present Farm Unit Compared To Average | 10 | 0 | 0 | 0 | |
| 6. Creation Of Nonfarmable Farmland | 25 | 0 | 0 | 1 | |
| 7. Availablility Of Farm Support Services | 5 | 5 | 5 | 5 | |
| 8. On-Farm Investments | 20 | 10 | 10 | 10 | |
| 9. Effects Of Conversion On Farm Support Services | 25 | 0 | 0 | 0 | |
| 10. Compatibility With Existing Agricultural Use | 10 | 5 | 5 | 5 | |
| TOTAL CORRIDOR ASSESSMENT POINTS | 160 | 45 | 65 | 66 | |
| **PART VII (To be completed by Federal Agency)** | | | | | |
| Relative Value Of Farmland (From Part V) | 100 | — | — | 72 | |
| Total Corridor Assessment (From Part VI above or a local site assessment) | 160 | 45 | 65 | 66 | |
| **TOTAL POINTS** (Total of above 2 lines) | 260 | 45 | 65 | 138 | |

| 1. Corridor Selected: 2. Total Acres of Farmlands to be Converted by Project: | 3. Date Of Selection: | 4. Was A Local Site Assessment Used? YES ☐ NO ☐ |
|---|---|---|
| | | |

5. Reason For Selection:

GS&P

GRESHAM
SMITH AND
PARTNERS

November 16, 2011

Mr. Paul Lowry
District Conservationist
Natural Resources Conservation Services
Service Center Office
733 S Line Street
Ripley, MS 38663-2812

**SUBJECT: ENVIRONMENTAL ASSESSMENT FOR RECONSTRUCTION OF SR 15 FROM CR 312 TO TN/MS STATE LINE PROJECT NO. SDP-0022-04(053)V21 / 101633-001000 WALNUT, TIPPAH COUNTY, MISSISSIPPI**

Dear Mr. Lowry:

The Mississippi Department of Transportation (MDOT), in cooperation with the Federal Highway Administration (FHWA) is preparing an Environmental Assessment (EA) to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line in Walnut, Tippah County, Mississippi a distance of approximately 5.5 miles. Gresham, Smith and Partners has been engaged to assist with the National Environmental Policy Act (NEPA) process and to develop alternative solutions for the proposed reconstruction of SR 15. Through the MDOT early planning process, a public meeting, and a local government meeting, the project now has three build alternatives. Alternative B-1 is to widen existing SR 15 to a four-lane and five-lane typical section and improve the at grade intersection at US 72. Alternative B-2 is to widen existing SR 15 to a four-lane and five-lane typical section and replace the existing at grade intersection at US 72 with a grade separated interchange. Alternative C will bypass Walnut to the west with a divided four-lane typical section and a new interchange at US 72. A No Build Alternative (Alternative A) will also be evaluated.

We are presently in the early stages of planning for this project and need to know if the proposed project will have any effect, either favorable or adverse, on any programs being planned or executed by your agency. We request that you review the enclosed material and advise us with your comments on potential impacts. Areas of specific concern to your agency will be addressed during the development of our environmental and location studies.

GS&P

GRESHAM
SMITH AND
PARTNERS



The Department's NEPA document will assess a wide range of concerns including impacts on the social, economic and ecological environment. Your input will assist us in the preparation of the NEPA documents.

If, in the Department's determination, the proposal will significantly affect the quality of the human environment, the Department will prepare a "Draft Environmental Impact Statement". This document will be circulated to federal, state, and local agencies and officials for review and comment.

In accordance with the Farmland Protection Policy Act of 1981, Title 7 C. F. R. 658.4, we are enclosing a Farmland Conversion Impact Rating form (NRCS-CPA-106) for your determination of whether this project contains farmland subject to the above act.

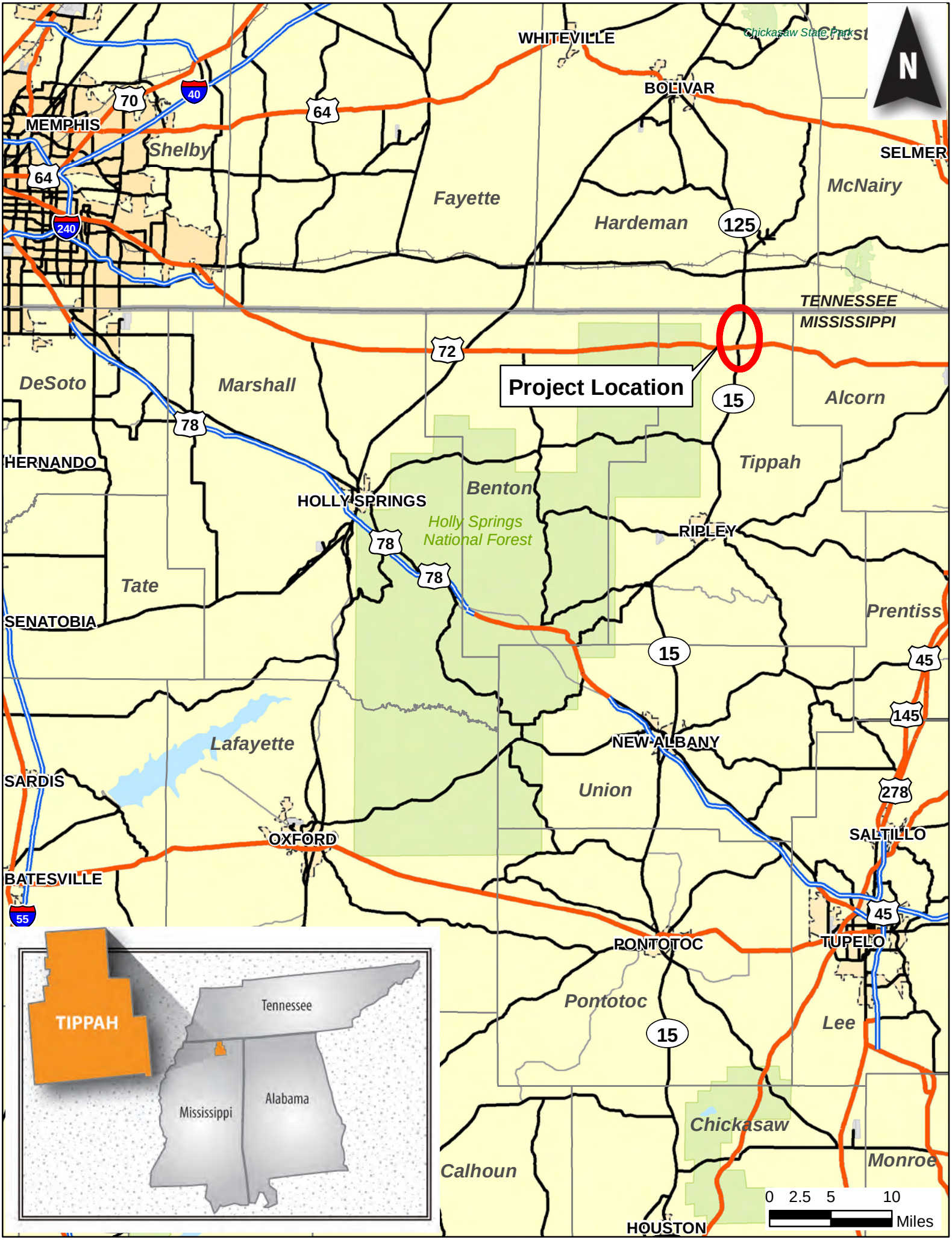
If there are areas that you feel require special consideration, we will be glad to cooperate with you in any way to avoid possible adverse effects or conflicts with any of your proposed programs.

Sincerely,

Sandra Layne-Sclafani
NEPA Consultant

Enclosures: General Location Map
Project Alternatives on Aerial Map
NRCS-CPA-106 Form
Concept Plans

# GENERAL LOCATION MAP


WHITEVILLE
Chickasaw State Park
BOLIVAR
MEMPHIS
Shelby
Fayette
Hardeman
McNairy
SELMER
TENNESSEE
MISSISSIPPI
Project Location
DeSoto
Marshall
Alcorn
HERNANDO
Tippah
Benton
HOLLY SPRINGS
Holly Springs National Forest
RIPLEY
Tate
SENATOBIA
Prentiss
Lafayette
NEW ALBANY
SARDIS
Union
OXFORD
SALTILLO
BATESVILLE
PONTOTOC
TUPELO
Pontotoc
Lee
Chickasaw
Calhoun
Monroe
HOUSTON
70
40
64
240
72
78
15
125
45
145
278
55
N
TIPPAH
Tennessee
Mississippi
Alabama
0 2.5 5 10
Miles

# PROJECT ALTERNATIVES ON AERIAL MAP

N

MISSISSIPPI

TENNESSEE

Mount Moriah Cemetery

Walnut Industrial Park

302

116

Christ Temple

312

306

115

Begin Project

Walnut Attendance Center

Walnut

Walnut Baptist Church

Harmony Church

15

Walnut Post Office

Walnut Town Hall

Harmony Cemetery

102

Hopkins Cemetery

Walnut Methodist Church

End Project

15

125

124

Brownfield United Methodist Church

354

126

72

## ALTERNATIVES

- Alternative A (No Build - Existing Alignment)
- Alternative B-1 (Widen existing SR 15; at-grade intersection at US 72)
- Alternative B-2 (Widen existing SR 15; add interchange at US 72)
- Alternative C (Construct a western bypass; interchange at US 72)

0 0.5 1 MILE

# NRCS-CPA-106
# FORM

U.S. DEPARTMENT OF AGRICULTURE

Natural Resources Conservation Service

NRCS-CPA-106

(Rev. 1-91)

# FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

| **PART I (To be completed by Federal Agency)** | 3. Date of Land Evaluation Request: 10/24/2011 | 4. Sheet 1 of 2 |
|---|---|---|
| 1. Name of Project: Reconstruction of SR 15 from CR 312 to TN/MS State Line, Walnut, Tippah County, MS | 5. Federal Agency Involved: Federal Highway Administration | |
| 2. Type of Project: Widening of existing SR 15 or construction of a new SR 15 Bypass | 6. County and State: Tippah County, MS | |

| **PART II (To be completed by NRCS)** | 1. Date Request Received by NRCS | 2. Person Completing Form |
|---|---|---|
| YES NO 3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). ☐☐ | | 4. Acres Irrigated Average Farm Size |
| 5. Major Crop(s) | 6. Farmable Land in Government Jurisdiction **Acres: %** | 7. Amount of Farmland As Defined in FPPA **Acres: %** |
| 8. Name Of Land Evaluation System Used | 9. Name of Local Site Assessment System | 10. Date Land Evaluation Returned by NRCS |

| **PART III (To be completed by Federal Agency)** | **Alternative Corridor For Segment** | | | |
|---|---|---|---|---|
| | **Alternative B-1** | **Alternative B-2** | **Alternative C** | |
| A. Total Acres To Be Converted Directly | 29.22 | 45.77 | 108.61 | |
| B. Total Acres To Be Converted Indirectly, Or To Receive Services | 0 | 0 | 6.66 | |
| C. Total Acres In Corridor | 311.14 | 420.20 | 572.66 | |
| **PART IV (To be completed by NRCS) Land Evaluation Information** | | | | |
| A. Total Acres Prime And Unique Farmland | | | | |
| B. Total Acres Statewide And Local Important Farmland | | | | |
| C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted | | | | |
| D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value | | | | |
| **PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)** | | | | |

| **PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))** | **Maximum Points** | | | | |
|---|---|---|---|---|---|
| 1. Area in Nonurban Use | **15** | 15 | 15 | 15 | |
| 2. Perimeter in Nonurban Use | **10** | 10 | 10 | 10 | |
| 3. Percent Of Corridor Being Farmed | **20** | 0 | 0 | 0 | |
| 4. Protection Provided By State And Local Government | **20** | 0 | 20 | 20 | |
| 5. Size of Present Farm Unit Compared To Average | **10** | 0 | 0 | 0 | |
| 6. Creation Of Nonfarmable Farmland | **25** | 0 | 0 | 1 | |
| 7. Availablility Of Farm Support Services | **5** | 5 | 5 | 5 | |
| 8. On-Farm Investments | **20** | 10 | 10 | 10 | |
| 9. Effects Of Conversion On Farm Support Services | **25** | 0 | 0 | 0 | |
| 10. Compatibility With Existing Agricultural Use | **10** | 5 | 5 | 5 | |
| TOTAL CORRIDOR ASSESSMENT POINTS | **160** | 45 | 65 | 66 | |
| **PART VII (To be completed by Federal Agency)** | | | | | |
| Relative Value Of Farmland (From Part V) | **100** | | | | |
| Total Corridor Assessment (From Part VI above or a local site assessment) | **160** | | | | |
| **TOTAL POINTS** (Total of above 2 lines) | **260** | 0 | 0 | 0 | 0 |

| 1. Corridor Selected: 2. Total Acres of Farmlands to be Converted by Project: | 3. Date Of Selection: | 4. Was A Local Site Assessment Used? YES NO ☐ ☐ |
|---|---|---|

5. Reason For Selection:

Signature of Person Completing this Part:

DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

**NRCS-CPA-106 (Reverse)**

## CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended? More than 90 percent - 15 points 90 to 20 percent - 14 to 1 point(s) Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use? More than 90 percent - 10 points 90 to 20 percent - 9 to 1 point(s) Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years? More than 90 percent - 20 points 90 to 20 percent - 19 to 1 point(s) Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland? Site is protected - 20 points Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with $1,000 or more in sales.) As large or larger - 10 points Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns? Acreage equal to more than 25 percent of acres directly converted by the project - 25 points Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s) Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets? All required services are available - 5 points Some required services are available - 4 to 1 point(s) No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures? High amount of on-farm investment - 20 points Moderate amount of on-farm investment - 19 to 1 point(s) No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area? Substantial reduction in demand for support services if the site is converted - 25 points Some reduction in demand for support services if the site is converted - 1 to 24 point(s) No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use? Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s) Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

Attachment to the NRCS-CPA-106

**FARMLAND CONVERSION IMPACT RATING**
**FOR CORRIDOR TYPE PROJECTS**
**Build Alternative B-1**
Widening of Existing SR 15 from SR 312 to Tennessee State Line
With Improved Intersection at US 72
Tippah County, Tennessee

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**Explanation of Answers to Part VI Corridor Assessment Criteria**

1. **How much land is in non-urban use within a radius of 1.0 mile from the project?** A buffer of one-mile radius around the right-of-way was generated and overlaid land use data. The results indicated that approximately 98 percent of the area was in non-urban use. A score of 15 was applied to this criterion.
2. **How much of the perimeter of the site borders on non-urban use?** According to measurements approximately 96 percent of the perimeter is in non-urban use. A score of 10 was applied to this criterion.
3. **How much of the site has been farmed more than five of the last ten years?** The percentage of the site that represents areas that could have possibly been farmed appears to be is 9.39%. Because this is less than 20%, a score of zero was applied to this criterion.
4. **Is the site subject to state or local government policies or programs to protect farmland?**
   According to a Resource Soil Scientist with the NRCS Tippah County Office, there are no state or local government policies or programs to protect farmland located within the Build Alternative B-1 corridor. A score of 0 was applied to this criterion.
5. **Are the farm units containing the site as large as the average-size farming unit in the county?** The largest farming operation which would be affected by the project is approximately 4.75 acres. This is less than 50 percent of the average county farm size, which is 165 acres. Therefore, a score of 0 is assigned to this criterion.
6. **How much of the remaining land on the farm will become non-farmable if the site is selected?** No farmland is anticipated to be converted indirectly by the construction of the roadway. A score of 0 was applied to this criterion.
7. **Does the site have available adequate supply of farm support services and markets?** All required services are available. This project would not have an impact on farm services; therefore, a score of 5 was assigned to this criterion.
8. **Does the site have substantial and well-maintained on farm investments such as barns, fruit trees and vines, field terraces, drainage, irrigation, waterways, and other soil and water conservation measures?**
   While the level of on-farm investment varied from farm to farm, a moderate amount of investment was observed during the field review. Investments such as barns, planting and harvesting equipment, and irrigation systems were observed. A score of 10 was applied to this criterion.
9. **Would this project, by converting the land to nonagricultural use, reduce the support for farm support services in the area?** Some reduction in demand for support services would be expected. However, considering that there are over 12,677 acres of cropland in the county, the conversion of 29.22

acres would result in no significant reduction in demand for services. A score of 0 was given to this criterion.

10. **Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland for nonagricultural use?** There is currently development along existing SR 15. This development is currently intermixed with agricultural uses. There is a moderate chance of development to the surrounding farmland along SR 15. A score of 5 was given to this criterion.

Attachment to the NRCS-CPA-106

**FARMLAND CONVERSION IMPACT RATING**
**FOR CORRIDOR TYPE PROJECTS**
**Build Alternative B-2**
Widening of Existing SR 15 from SR 312 to Tennessee State Line
With Interchange at US 72
Tippah County, Tennessee

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**Explanation of Answers to Part VI Corridor Assessment Criteria**

1. **How much land is in non-urban use within a radius of 1.0 mile from the project?** A buffer of one-mile radius around the right-of-way was generated and overlaid land use data. The results indicated that approximately 98percent of the area was in non-urban use. A score of 15 was applied to this criterion.
2. **How much of the perimeter of the site borders on non-urban use?** According to measurements approximately 96 percent of the perimeter is in non-urban use. A score of 10 was applied to this criterion.
3. **How much of the site has been farmed more than five of the last ten years?** The percentage of the site that represents areas that could have possibly been farmed appears to be is 10.89%. Because this is less than 20%, a score of zero was applied to this criterion.
4. **Is the site subject to state or local government policies or programs to protect farmland?**
   According to a Resource Soil Scientist with the Tippah County Office, there are four farms in the Build Alternative C corridor that participate in the Conservation Reserve Program, which is administered by USDA Farm Service Agency. A score of 20 was applied to this criterion.
5. **Are the farm units containing the site as large as the average-size farming unit in the county?** The largest farming operation which would be affected by the project is approximately 16.55 acres. This is less than 50 percent of the average county farm size, which is 165 acres. Therefore, a score of 0 is assigned to this criterion.
6. **How much of the remaining land on the farm will become non-farmable if the site is selected?** No farmland is anticipated to be converted indirectly by the construction of the roadway. A score of 0 was applied to this criterion.
7. **Does the site have available adequate supply of farm support services and markets?** All required services are available. This project would not have an impact on farm services; therefore, a score of 5 was assigned to this criterion.
8. **Does the site have substantial and well-maintained on farm investments such as barns, fruit trees and vines, field terraces, drainage, irrigation, waterways, and other soil and water conservation measures?**
   While the level of on-farm investment varied from farm to farm, a moderate amount of investment was observed during the field review. Investments such as barns, planting and harvesting equipment, and irrigation systems were observed. A score of 10 was applied to this criterion.
9. **Would this project, by converting the land to nonagricultural use, reduce the support for farm support services in the area?** Some reduction in demand for support services would be expected. However, considering that there are over 12,677 acres of cropland in the county, the conversion of 45.77

acres would result in no significant reduction in demand for services. A score of 0 was given to this criterion.

10. **Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland for nonagricultural use?** There is currently development along existing SR 15. This development is currently intermixed with agricultural uses. There is a moderate chance of development to the surrounding farmland along SR 15. A score of 5 was given to this criterion.

Attachment to the NRCS-CPA-106

**FARMLAND CONVERSION IMPACT RATING**
**FOR CORRIDOR TYPE PROJECTS**
**Build Alternative C**
Construction of SR 15 Bypass from SR 312 to Tennessee State Line
Tippah County, Tennessee

**Explanation of Answers to Part VI Corridor Assessment Criteria**

1. **How much land is in non-urban use within a radius of 1.0 mile from the project?** A buffer of one-mile radius around the right-of-way was generated and overlaid land use data. The results indicated that approximately 98 percent of the area was in non-urban use. A score of 15 was applied to this criterion.
2. **How much of the perimeter of the site borders on non-urban use?** According to measurements approximately 96 percent of the perimeter is in non-urban use. A score of 10 was applied to this criterion.
3. **How much of the site has been farmed more than five of the last ten years?** The percentage of the site that represents areas that could have possibly been farmed appears to be is 18.97%. Because this is less than 20%, a score of zero was applied to this criterion.
4. **Is the site subject to state or local government policies or programs to protect farmland?**
   According to a Resource Soil Scientist with the Tippah County Office, there are four farms in the Build Alternative C corridor that participate in the Conservation Reserve Program, which is administered by USDA Farm Service Agency. A score of 20 was applied to this criterion.
5. **Are the farm units containing the site as large as the average-size farming unit in the county?** The largest farming operation which would be affected by the project is approximately 21.01 acres. This is less than 50 percent of the average county farm size, which is 165 acres. Therefore, a score of 0 is assigned to this criterion.
6. **How much of the remaining land on the farm will become non-farmable if the site is selected?** Farmland anticipated to be converted indirectly by the construction of the roadway is 6.66 acres. This is equal to 6.13% of acres directly converted by the project. A score of 1 was applied to this criterion.
7. **Does the site have available adequate supply of farm support services and markets?** All required services are available. This project would not have an impact on farm services; therefore, a score of 5 was assigned to this criterion.
8. **Does the site have substantial and well-maintained on farm investments such as barns, fruit trees and vines, field terraces, drainage, irrigation, waterways, and other soil and water conservation measures?**
   While the level of on-farm investment varied from farm to farm, a moderate amount of investment was observed during the field review. Investments such as barns, planting and harvesting equipment, and irrigation systems were observed. A score of 10 was applied to this criterion.
9. **Would this project, by converting the land to nonagricultural use, reduce the support for farm support services in the area?** Some reduction in demand for support services would be expected. However, considering that there are over 12,677 acres of farmland in the county, the conversion of 115.27

acres would result in no significant reduction in demand for services. A score of 0 was given to this criterion.

10. **Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland for nonagricultural use?** With the new bypass assumed to be a limited access facility, the main factor governing the conversion of the surrounding farmland to nonagricultural use is the distance you have to drive to an access point. Therefore, the chance of development to the surrounding farmland could be less. A score of 5 was given to this criterion.

# Appendix E

# Early Coordination

MISSISSIPPI DEPARTMENT *of* ARCHIVES AND HISTORY

MDAH

PO Box 571, Jackson, MS 39205-0571
601-576-6850 • Fax 601-576-6975
mdah.state.ms.us
*H.T. Holmes, Director*

May 27, 2011

Ms. Kim Thurman
MDOT
Environmental Division
P.O. Box 1850
Jackson, Mississippi 39125-1850

RE: Environmental Assessment for SR 15 from CR 312 to TN/MS State Line, Project No. SDP-0022-04(053)V21 / 101633-001000, MDAH Project Log #05-076-11, Tippah County

Dear Kim:

We received your March 22, 2001 Environmental Assessment for the above referenced project on March 23, 2011. We appreciate the opportunity to comment as a participating agency. After reviewing the information provided, in accordance with our responsibilities under Section 106 of the National Historic Preservation Act and 36 CFR Part 800, we find the Environmental Assessment demonstrates a good faith effort by MDOT to solicit comment on the established options for the route. With respect to cultural resources, we are unable to comment without more detailed surveys of the proposed routes, which we understand will be forthcoming as the project progresses. We look forward to receiving these survey reports in the future and will provide appropriate comments at that time.

If we can be of further assistance, please do not hesitate to contact us at (601) 576-6940.

Sincerely,

Greg Williamson
Review and Compliance Officer

FOR: H.T. Holmes
State Historic Preservation Officer

**MISSISSIPPI**
**DEPARTMENT OF WILDLIFE, FISHERIES, AND PARKS**

**Sam Polles, Ph.D.**
Executive Director

March 26, 2011

Kim Thurman
Mississippi Department of Transportation
P.O. Box 1850
Jackson, MS 39215

Re: Environmental Assessment for SR 15
From CR 312 to TN/MS State Line
**Project No. SDP-0022-04(053)V21 / 101633-001000** **R# 8259**
Tippah County, Mississippi

To Whom It May Concern,

In response to your request for information dated March 22, 2011, we have searched our database for occurrences of state or federally listed species and species of special concern that occur within 2 miles of the site of the proposed project. Please find our concerns and recommendations below.

The following species of concern have been documented within 2 miles of the proposed project area:

| SCIENTIFIC NAME | COMMON NAME | FED | STATE | STATE RANK |
|---|---|---|---|---|
| | | | | |
| *Cyprinella whipplei* | Steelcolor Shiner | | | S2 |
| *Agalinis oligophylla* | Ridge-Stem False-Foxglove | | | S2 |

State Rank
S1 — Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
S2 — Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
S3 — Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).
State and Federal Status

LE Endangered — A species which is in danger of extinction throughout all or a significant portion of its range.
LT Threatened — A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

**Based on information provided, we conclude that if best management practices are properly implemented, monitored, and maintained (particularly measures to prevent, or at least, minimize negative impacts to water quality), the proposed project likely poses no threat to listed species or their habitats.**

**Recommendations:**

We recommend that best management practices be properly implemented, monitored, and maintained for compliance, specifically measures that will prevent suspended silt and contaminants from leaving the site in stormwater run-off as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies.

In addition, portions of this project site are underlain by hydric soils and may be designated wetlands. If this project is approved, we ask that serious consideration be given to the cumulative impacts of wetland/stream disturbance and elimination, and that appropriate in-kind mitigation be provided.

Please feel free to contact us if we can provide any additional information, resources, or assistance that will help minimize negative impacts to the species and/or ecological communities identified in this review. We are happy to work with you to ensure that our state's precious natural heritage is conserved and preserved for future Mississippians.

Sincerely,

Sam Polles, Ph.D.
Executive Director
Mississippi Department of Wildlife, Fisheries, and Parks
(601) 432-2400

MISSISSIPPI
DEPARTMENT OF WILDLIFE, FISHERIES, AND PARKS

Sam Polles, Ph.D.
Executive Director

October 4, 2011

James Storm
Third Rock Consultants, LLC
2526 Regency Road
Suite 180
Lexington, KY 40503

Re: SR15 from CR312 to the TN State Line
Development / Road
Tippah County, Mississippi

**R# 8617**

To Whom It May Concern,

In response to your request for information dated September 27, 2011, we have searched our database for occurrences of state or federally listed species and species of special concern that occur within 2 miles of the site of the proposed project. Please find our concerns and recommendations below.

The following species of concern have been documented within 2 miles of the proposed project area:

| SCIENTIFIC NAME | COMMON NAME | FED | STATE | STATE RANK |
|---|---|---|---|---|
| | | | | |
| *Cyprinella whipplei* | Steelcolor Shiner | | | S2 |
| *Agalinis oligophylla* | Ridge-Stem False-Foxglove | | | S2 |

State Rank
S1 — Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
S2 — Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
S3 — Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).
State and Federal Status

LE Endangered — A species which is in danger of extinction throughout all or a significant portion of its range.
LT Threatened — A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

**Based on information provided, we conclude that if best management practices are properly implemented, monitored, and maintained (particularly measures to prevent, or at least, minimize negative impacts to water quality), the proposed project likely poses no threat to listed species or their habitats.**

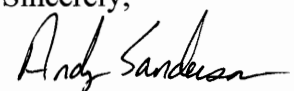
**Recommendations:**

We recommend that best management practices be properly implemented, monitored, and maintained for compliance, specifically measures that will prevent suspended silt and contaminants from leaving the site in stormwater run-off as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies.

In addition, portions of this project site are underlain by hydric soils and may be designated wetlands. If this project is approved, we ask that serious consideration be given to the cumulative impacts of wetland/stream disturbance and elimination, and that appropriate in-kind mitigation be provided.

Please feel free to contact us if we can provide any additional information, resources, or assistance that will help minimize negative impacts to the species and/or ecological communities identified in this review. We are happy to work with you to ensure that our state's precious natural heritage is conserved and preserved for future Mississippians.

Sincerely,



Andy Sanderson, Ecologist
Mississippi Natural Heritage Program
(601) 576-6049

THIRD ROCK
WWW.THIRDROCKCONSULTANTS.COM

September 27, 2011

RECEIVED
By MS Field Office

Steve Ricks
US Fish & Wildlife Services
Ecological Services
6578 Dogwood View Parkway, Suite A
Jackson, MS 39213

Re: *SR 15 Environmental Assessment, Tippah County, Mississippi*

Dear Mr. Ricks:

Third Rock Consultants LLC (Third Rock), as a subconsultant to Gresham Smith & Partners (GS&P), will prepare the ecology screening and technical studies as part of the environmental assessment (EA) for the location and improvements of SR 15 in Tippah County. The project begins approximately 2.4 miles south of US 72 in the vicinity of CR 312 and ends at the Tennessee state line.

I am requesting information that USFWS may have regarding endangered, threatened, or rare species listed for the project area. I am also interested in information on identified natural areas and unique, sensitive, or critical wildlife habitat in the project area.

Enclosed are 3 maps of the project area. Please let me know if you need additional information.

Very truly yours,

James Storm
jstorm@thirdrockconsultants.com
2526 Regency Rd | Ste 180 |
Lexington, KY 40503 | 859.977.2000
Mobile 859.358.5958

**No federally listed endangered, threatened or candidate species present**

**U.S. Fish and Wildlife Service**
**Mississippi Field Office**
**6578 Dogwood View Pkwy**
**Jackson, MS 39213**
**Log# 2012-I-14 Date 10/14/11**

RECEIVED
SEP 2 9 2011
By MS Field Office

**Melinda L. McGrath**
Interim Executive Director/
Chief Engineer

**Brenda Znachko**
Deputy Executive Director/
Administration

MDOT
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**Charles R. Carr**
Director
Office of Intermodal Planning

**Willie Huff**
Director
Office of Enforcement

*P. O. Box 1850 / Jackson, Mississippi 39215-1850 / Telephone (601) 359-7001 / FAX (601) 359-7110 / www.GoMDOT.com*

March 22, 2011

The Honorable Bill Stone
47 Windbourne Avenue
Ashland, Mississippi 38603

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Senator Stone:

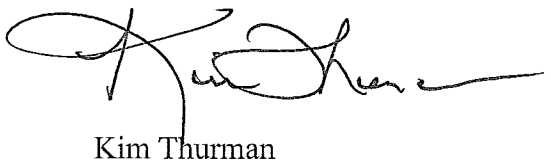
The Mississippi Department of Transportation (MDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line in Tippah County, a distance of approximately 5.5 miles. Gresham, Smith and Partners has been engaged to assist with the National Environmental Policy Act (NEPA) process and to develop alternative solutions.

This study is in the early scoping phase and views from federal, state and local agencies, organizations and individuals are being solicited. MDOT is seeking early identification of possible economic, social or environmental effects or concerns. This letter serves as formal notification of the project and solicits the views of agency representatives regarding potential impacts associated with the project. Your assistance in this regard will be greatly appreciated. Please let us know if you feel a scoping meeting and/or a site visit with the Project Team would be beneficial to your evaluation.

To facilitate your participation in the process, we have attached maps showing the general location of the study area along with a preliminary description of the project and known environmental features within the study area. Your written comments on any anticipated issues or concerns will be welcome to this endeavor.

Please do not hesitate to request additional information from either myself or Mr. Adam Johnson at (601) 359-7920. We respectfully request your comments by April 15th. Thank you in advance for your cooperation.

Sincerely,



Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, Federal Highway Administration – Mississippi Division
Mr. Bill Jamieson, MS Dept. of Transportation, District 1 Engineer

## ***Project Summary***

### *Introduction*

The Mississippi Department of Transportation (MDOT) is proposing a project to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line, a distance of approximately 5.5 miles (see Figures 1 and 2). SR 15 serves industrial and residential areas in Tippah County and also serves as a north/south corridor for commuters.

### *Project Purpose*

The purpose of the project is to provide a transportation facility that improves safety, addresses existing and future traffic needs, corrects geometric deficiencies and fulfills the legislative mandate to develop four-lane highways within the state as defined in the 1987 *Four Lane Highway Program* and the 2005 *Vision 21*.

The project area is within and adjacent to the Town of Walnut which is the northernmost town in Tippah County. The project area is comprised of industrial properties, small businesses, government buildings, churches, schools, single family residences, forested areas, and farms. There are three industrial parks in Tippah County: Walnut Industrial Park, North Ripley Industrial Park and Ripley Industrial Park. The Walnut Industrial Park is located on US 72, 1.3-miles west of the US 72/SR 15 intersection. Its primary occupant with approximately 90 employees is Abby Manufacturing, which manufactures All Terrain Vehicle (ATV) accessories. Farther south on SR 15 is the North Ripley Industrial Park. The Ripley Industrial Park is located east of the SR 15 and SR 4 intersection approximately 0.5-mile off of SR 4. The two largest manufacturers in the county, with approximately 1,300 employees, are Ashley Furniture and Thyssen-Krupp. Many Tippah County residents work at these and other manufacturing facilities within the county. Many other Tippah County residents commute to Memphis via US 72. Preliminary reviews of existing SR 15 indicate that the current roadway will be inadequate to handle future capacity needs. MDOT proposes to widen the existing SR 15 roadway or construct a bypass west of Walnut to provide for the future capacity needs, to address current safety issues, to correct geometric deficiencies and to fulfill the legislative mandate.

The purpose and need for the proposed project will be developed through coordination with local officials, agencies and public/stakeholder interviews.

### *Alternatives*

Three alternatives will be considered in the National Environmental Policy Act (NEPA) process, as will any other alternatives that are identified once the project's purpose and need is finalized.

Alternative A - The No-Build Alternative

The No-Build Alternative involves making no modifications or improvements over the planning horizon to existing SR 15 except for routine maintenance. This option does not meet the proposed project needs of improving safety, providing for existing and future traffic needs, correcting geometric deficiencies and fulfilling the legislative mandate.

Alternative B:
Alternative B involves improving existing two-lane SR 15 to four-lane and five-lane sections of roadway along existing SR 15. It starts at CR 312 and follows existing SR 15 north to the Tennessee/Mississippi State Line. The current at grade intersection at US 72 and SR 15 in Walnut would be replaced by a grade-separated interchange. Alternative B is approximately 5.5 miles in length.

Alternative C:
Alternative C proposes bypassing Walnut to the west with a divided four-lane section. It starts at CR 312 and begins deviating to the west from existing SR 15 as it approaches US 72. It would cross US 72 with a grade-separated interchange approximately 0.5 mile west of the existing US 72/SR 15 intersection. Moving northward, the highway would tie back to existing SR 15 approximately 0.7 mile north of the US 72/SR 15 intersection. Alternative C is approximately 5.7 miles in length.

## ***Summary of Environmental Concerns***

### *Land Use*
The project area is comprised of industrial properties, small businesses, government buildings, churches, schools, single family residences, forested areas, and farms.

### *Noise Impacts*
A noise study will be conducted for the project. The results of this study will be presented in a report that identifies whether the project will have an impact on noise-sensitive receptors and the level of impact, if an impact is identified.

### *Ecological Impacts*
Detailed terrestrial and aquatic studies will be conducted to determine the project's impact on the ecological environment. Studies will be done to determine the presence of any endangered or threatened species or unique wildlife habitat that could be affected by project construction. Studies will also determine if any wetlands will be affected. Attempts will first be made to avoid any adverse ecological impacts identified. If avoidance of adverse impacts is not possible, then mitigation measures will be developed to minimize those impacts.

### *Cultural Resources Impacts*
Historic and archaeological studies will be done to determine if there are any sites or properties in the project impact area that are eligible for or listed in the National Register of Historic Places (NRHP).

### *Farmland Impacts*
Studies will be done to assess the project impacts on farmland or farmable land.

### *Social and Economic Impacts*
Social and economic impacts will be assessed using information from the United States Census Bureau, supplemented by information from the Tippah County Development Foundation and interviews with local officials and area stakeholders.

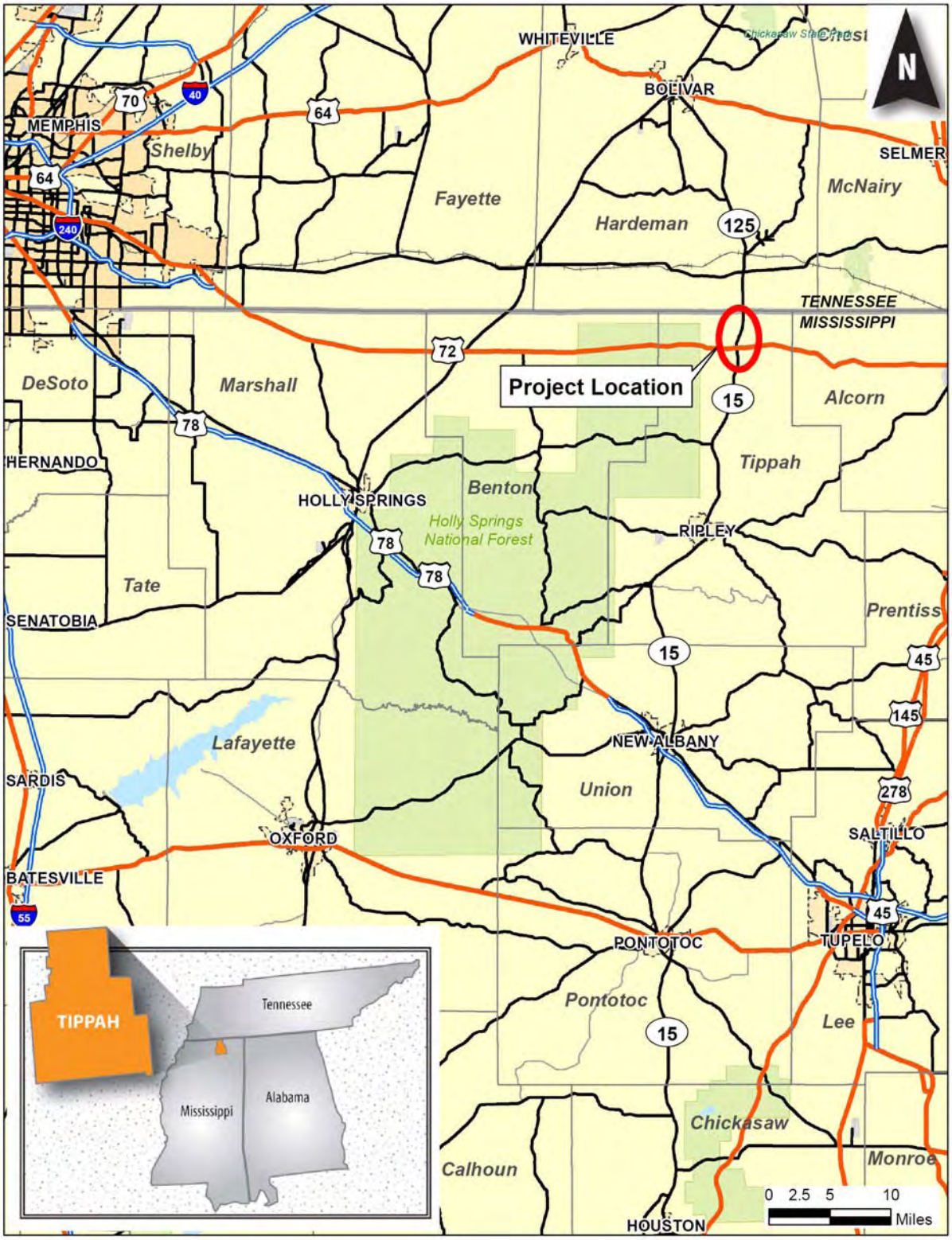



**Figure 1. General Location Map**

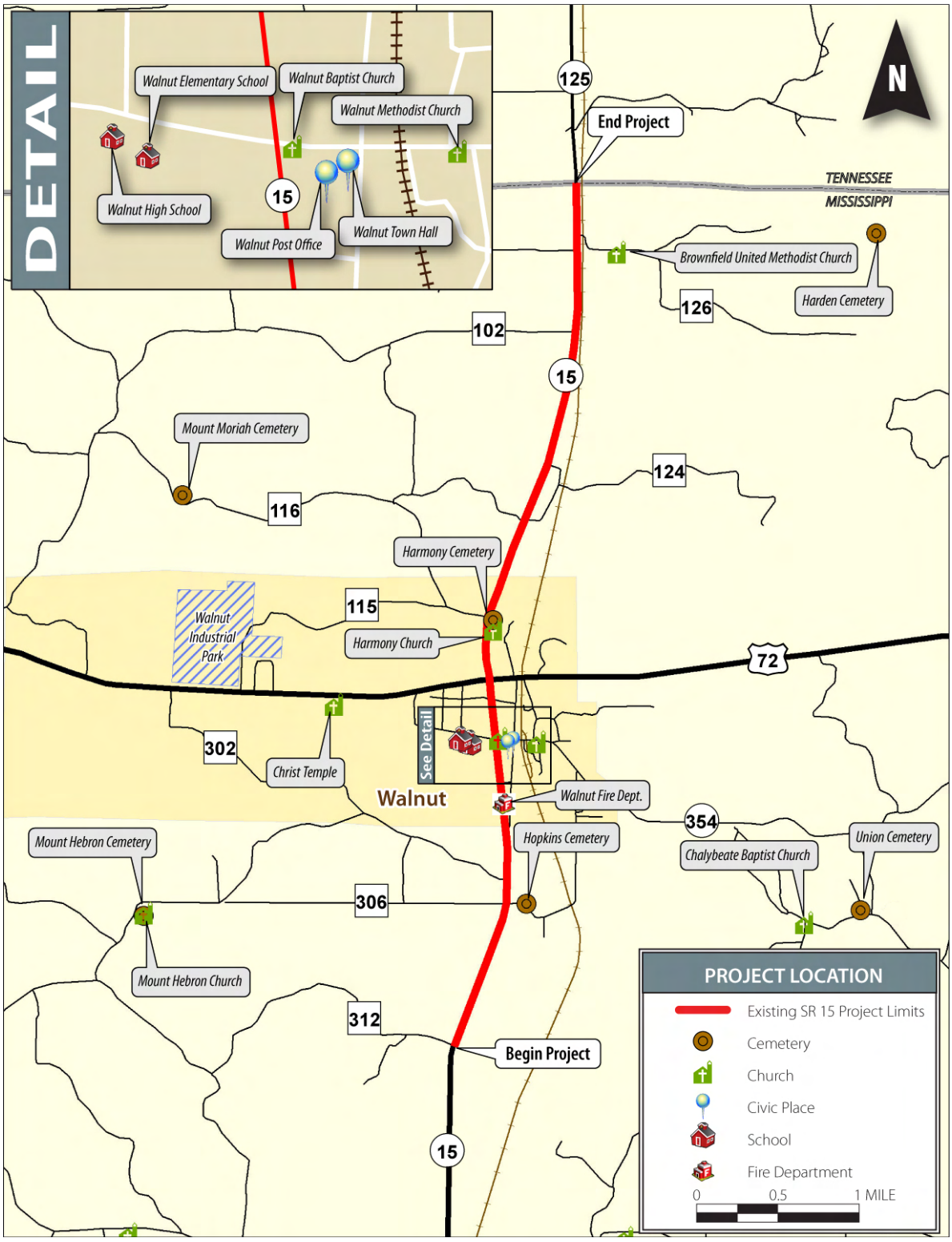



**Figure 2. Project Location Map**

**Melinda L. McGrath**
Interim Executive Director/
Chief Engineer

**Brenda Znachko**
Deputy Executive Director/
Administration

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

**Charles R. Carr**
Director
Office of Intermodal Planning

**Willie Huff**
Director
Office of Enforcement

*P. O. Box 1850 / Jackson, Mississippi 39215-1850 / Telephone (601) 359-7001 / FAX (601) 359-7110 / www.GoMDOT.com*

March 22, 2011

The Honorable Greg Ward
670 Highway 4 West
Ripley, Mississippi 38663

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Representative Ward:

The Mississippi Department of Transportation (MDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line in Tippah County, a distance of approximately 5.5 miles. Gresham, Smith and Partners has been engaged to assist with the National Environmental Policy Act (NEPA) process and to develop alternative solutions.

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Sincerely,

Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, Federal Highway Administration – Mississippi Division
Mr. Bill Jamieson, MS Dept. of Transportation, District 1 Engineer

**Melinda L. McGrath**
Interim Executive Director/
Chief Engineer

**Brenda Znachko**
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March 22, 2011

The Honorable Jimmy Gunn
101 East Spring Street
Ripley, Mississippi 38663

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Supervisor Gunn:

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Kim Thurman
Environmental Division Administrator

Enclosure

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Mr. Bill Jamieson, MS Dept. of Transportation, District 1 Engineer

**Melinda L. McGrath**
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March 22, 2011

The Honorable Vicki Skinner
621 Main Street
Walnut, Mississippi 38683

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Mayor Skinner:

The Mississippi Department of Transportation (MDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line in Tippah County, a distance of approximately 5.5 miles. Gresham, Smith and Partners has been engaged to assist with the National Environmental Policy Act (NEPA) process and to develop alternative solutions.

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Kim Thurman
Environmental Division Administrator

Enclosure

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Mr. Bill Jamieson, MS Dept. of Transportation, District 1 Engineer

**Melinda L. McGrath**
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March 22, 2011

Mr. Homer L. Wilkes
USDA-Natural Resources Conservation Service
100 West Capitol Street, Suite 1321
Jackson,MS 39269

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Mr. Wilkes:

The Mississippi Department of Transportation (MDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line in Tippah County, a distance of approximately 5.5 miles. Gresham, Smith and Partners has been engaged to assist with the National Environmental Policy Act (NEPA) process and to develop alternative solutions.

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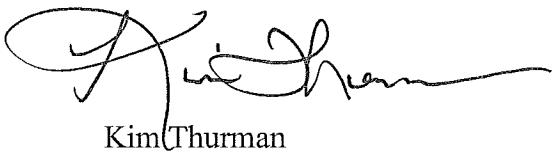

Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division
Mr. Al Garner, USDA-NRCS – Asst. State Conservationist
Ms. Decunda Duke-Bozeman, USDA-NRCS – Natural Resource Specialist

**Melinda L. McGrath**
Interim Executive Director/
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**Brenda Znachko**
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March 22, 2011

Mr. Stephen Ricks
U. S. Fish and Wildlife Service
6578 Dogwood View Parkway
Jackson,MS 39213

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Stephen
~~Mr. Ricks~~:

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Sincerely,

Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division
Ms. Sandra Kilpatrick, U.S. Fish and Wildlife Service

**Melinda L. McGrath**
Interim Executive Director/
Chief Engineer

**Brenda Znachko**
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March 22, 2011

Mr. Mickey Plunkett
US Geological Survey, WRD
308 South Airport Road
Jackson,MS 39208

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Mickey
Mr. ~~Plunkett~~:

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Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division

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March 22, 2011

Mr. Anthony Lobred
US Army Corps of Engineers-Vicksburg District
4155 Clay Street
Vicksburg, MS 39183

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Tony
Mr. ~~Lobred~~

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Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division

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Interim Executive Director/
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Office of Enforcement

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March 22, 2011

Ms. Ntale Kajumba
U.S. EPA Region 4
61 Forsyth Street
Atlanta, GA 30303

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Ntale.

Ms. ~~Kajumba~~:

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Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division

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*P. O. Box 1850 / Jackson, Mississippi 39215-1850 / Telephone (601) 359-7001 / FAX (601) 359-7110 / www.GoMDOT.com*

March 22, 2011

Mr. H.T. Holmes
Miss. Department of Archives and History
P. O. Box 571
Jackson, MS 39205

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Mr. Holmes:

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Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division
Mr. Greg Williamson, MDAH – Review and Compliance Officer

**Melinda L. McGrath**
Interim Executive Director/
Chief Engineer

**Brenda Znachko**
Deputy Executive Director/
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Office of Enforcement

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March 22, 2011

Ms. Trudy Fisher
Miss. Department of Environmental Quality
P. O. Box 20305
Jackson, MS 39289

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Ms. Fisher:

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Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division
Ms. Maya Rao, MS Department of Environmental Quality – Air Quality Section
Ms. Florance Watson, MS Department of Environmental Quality - Water Quality Section

**Melinda L. McGrath**
Interim Executive Director/
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**Brenda Znachko**
Deputy Executive Director/
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March 22, 2011

Dr. Sam Polles
Mississippi Dept. of Wildlife, Fisheries & Parks
1505 Eastover Drive
Jackson,MS 39211

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Dr. Polles:

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Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division
Dr. Sherry Surrette, MDWFP – Research Coordinator
Mr. Dennis Riecke, MDWFP – Fisheries Biologist

**Melinda L. McGrath**
Interim Executive Director/
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Deputy Executive Director/
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March 22, 2011

Mr. Don Underwood
MS Soil & Water Conservation Commission
P. O. Box 23005
Jackson, MS 39225

Re. **Environmental Assessment for SR 15**
From CR 312 to TN/MS State Line
Project No. SDP-0022-04(053)V21 / 101633-001000
Tippah County, Mississippi

Mr. Underwood:

The Mississippi Department of Transportation (MDOT), in cooperation with the Federal Highway Administration (FHWA), is preparing an Environmental Assessment to widen and/or construct a bypass on State Route (SR) 15 from County Road (CR) 312 north to the Tennessee/Mississippi State Line in Tippah County, a distance of approximately 5.5 miles. Gresham, Smith and Partners has been engaged to assist with the National Environmental Policy Act (NEPA) process and to develop alternative solutions.

This study is in the early scoping phase and views from federal, state and local agencies, organizations and individuals are being solicited. MDOT is seeking early identification of possible economic, social or environmental effects or concerns. This letter serves as formal notification of the project and solicits the views of agency representatives regarding potential impacts associated with the project. Your assistance in this regard will be greatly appreciated. Please let us know if you feel a scoping meeting and/or a site visit with the Project Team would be beneficial to your evaluation.

To facilitate your participation in the process, we have attached maps showing the general location of the study area along with a preliminary description of the project and known environmental features within the study area. Your written comments on any anticipated issues or concerns will be welcome to this endeavor.

The project team is currently preparing a project geographic information system (GIS) and project database. Any statistical data your agency can provide would be helpful. This

information will be handled with discretion and fully considered during the project's development.

Please do not hesitate to request additional information from either myself or Mr. Adam Johnson at (601) 359-7920. We respectfully request your comments by April 15th. Thank you in advance for your cooperation.

Sincerely,

Kim Thurman
Environmental Division Administrator

Enclosure

cc. Mr. E. Claiborne Barnwell, P.E., FHWA – Mississippi Division

# Appendix F

# Noise Technical Report

Note: Report was completed for SR 15 from CR 312 to Mississippi/Tennessee State Line

# Traffic Noise Assessment

## SR 15 Improvements
## Walnut, Tippah County, Mississippi
## Project No. STP-0022-04(037)/101633-001000

*Prepared for*
Gresham Smith & Partners
385-B Highland Colony Parkway, Suite 410
Ridgeland, MS 39157

December 15, 2011
Revised February 17, 2012
Revised April 23, 2012

*Prepared by*
Third Rock Consultants, LLC
2526 Regency Road, Suite 180
Lexington, KY 40503
859.977.2000

Prepared by:

Steve Evans

Reviewed by:

Jennifer Shelby, PE

# Executive Summary

Third Rock Consultants, LLC (Third Rock) was contracted as a subconsultant of Gresham Smith & Partners to prepare a Traffic Noise Assessment for improvements of SR 15 from the vicinity of CR 312 to the Tennessee state line in Tippah County, Mississippi. This baseline study considers traffic noise impacts to the community and was prepared at the request of the Mississippi Department of Transportation (MDOT). The project (MDOT Project No.: STP-0022-04(037)/101633-001000) is approximately 6 miles long and includes the study of two Build Alternatives as well as the No-Build Alternative.

This study has been prepared in accordance with the FHWA noise standards, 23 CFR 772, *Procedures for Abatement of Highway Traffic and Construction Noise* (2010), and the MDOT's *Highway Traffic Noise Policy* (2011).

Existing noise levels were measured on October 17 to 20, 2011 at fourteen locations in the project area. Noise monitoring was performed during the period of peak morning (6:30 a.m. through 8:30 a.m.) and/or afternoon (4 p.m. through 6 p.m.) traffic volumes. Noise levels were monitored for at least 15 minutes during high traffic volume. Noise measurements were used to validate the traffic noise model for the project area.

Two hundred sixty-nine (269) noise-sensitive facilities are located within the proposed project area. These facilities consist of 244 Activity Category B receptors, eight Activity Category C receptors, eight Activity Category D receptors, and nine Activity Category E receptors. Under existing conditions, two of these facilities have traffic noise levels approaching or exceeding Noise Abatement Criteria (NAC) levels. For the 2040 No-Build Alternative, the noise levels at noise sensitive facilities located along the proposed project are predicted to be 0 to 4 dBA higher than existing noise levels and 9 receptors are predicted to be impacted.

For the 2040 No-Build Alternative, nine residences are predicted to be impacted due to noise levels above the NAC. For Build Alternative B-1, 10 residences, Harmony Cemetery and Christ Temple Church are predicted to be impacted due to noise levels above the NAC, and 60 residences and one commercial receptor would be within the right-of-way. For Build Alternative B-2, eight residences, Harmony Cemetery and Christ Temple Church are predicted to be impacted due to noise levels above the NAC and 63 residences and one commercial receptor would be within the right-of-way. For Build Alternative C, one residence is predicted to be impacted due to noise levels above the NAC and 69 residences would be within the right-of-way. No receptors were predicted to be impacted due to a substantial noise increase.

MDOT guidelines state that noise abatement measures should be considered for receptors with predicted traffic noise impacts. Twelve receptors were impacted by one or more Build Alternatives including the following receptors: 4 (Harmony Cemetery), 5, 8, B93, B117, B120, B121, B122, B123, B222, B224, and C6 (Christ Temple Church).

A reduction of the speed limit or other traffic management would not meet the purpose and need of the project, which is to provide a high-speed access corridor. Thus, traffic management measures are not appropriate abatement measures. The evaluated Build alternatives were selected due to many factors and constraints, including impacting the least number of facilities and avoidance of several cemeteries in the area. The Alternatives have differing numbers of traffic noise impacts: Build Alternative B-1 has the most (12), followed by Build Alternative B-2 (10), and Build Alternative C has the least impacts (1). By selection of Build Alternative C, most impacts may be avoided.

Installation of structural noise barriers was evaluated at 12 locations for the 2040 design year. According to MDOT policy, noise barriers must be both feasible and reasonable to be implemented as an abatement measure. Noise barriers were found to be not feasible at 9 locations since a 5 dBA noise reduction could not be achieved at the impacted receptors. A noise barrier was found to be unfeasible at Harmony Cemetery (Receptor 4) because it would require limiting the points of ingress or egress. Noise barriers were found to be feasible for Receptor 8 and Receptor B123 but not reasonable due to high costs per benefited receptor. No noise barriers are likely to be implemented on this project due to avoidance options and the unlimited accessibility of SR 15.

For future development, local officials are encouraged to establish ordinances to require future development to be set back a minimum distance from the highway (as specified in the report) such that the Noise Abatement Criteria is not exceeded for the land use (residential or commercial).

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## TABLES

## EXHIBITS



## APPENDICES

# I. PROJECT DESCRIPTION

Third Rock Consultants, LLC (Third Rock) was contracted as a subconsultant of Gresham Smith & Partners to prepare a Traffic Noise Assessment for improvements of SR 15 from the vicinity of CR 312 to the Tennessee state line in Tippah County, Mississippi. This baseline study considers traffic noise impacts to the community and was prepared at the request of the Mississippi Department of Transportation (MDOT). The project (MDOT Project No.: STP-0022-04(037)/101633-001000) is approximately six miles long and includes the study of two Build Alternatives as well as the No-Build Alternative.

This study has been prepared in accordance with the Federal Highway Administration's (FHWA) noise standards, 23 CFR 772, *Procedures for Abatement of Highway Traffic and Construction Noise* (2010), and the MDOT's *Highway Traffic Noise Policy* (2011). The noise analysis included the following tasks:

- Identification of noise-sensitive land uses: identification of existing land uses in the project area that are sensitive to highway traffic noise
- Determination of existing sound levels: measurement and/or prediction of existing worst-hour sound levels at noise-sensitive land uses to characterize the existing noise environment in the project area; development of validation models using Traffic Noise Model 2.5® (FHWA TNM, February 2004)
- Determination of future sound levels: prediction of design year worst-hour sound levels for the No-Build and Build Alternatives using FHWA TNM
- Determination of traffic noise impacts: determination of traffic noise impacts based on the increase in existing sound levels and predicted design year sound levels
- Noise abatement evaluation: evaluation of noise abatement measures for noise-sensitive land uses predicted to be impacted by the project
- Discussion of construction noise
- Provision of information for local officials

Each of these steps and all analysis results are thoroughly documented in this noise assessment technical report. Each step of the analysis is discussed in detail below following a description of the project area and a discussion of the fundamentals of sound and noise and the criteria for determining noise impacts.

## *A. Location*

The project is located in Tippah County in the town of Walnut, Mississippi. Improvements to SR 15 will begin near the vicinity of CR 312 in the south to the Tennessee state line in the north. The project spans along US 72 from just west of CR 302 to east of CR 277. Exhibit 1, page 2, shows the project location in relation to the community, county, and surrounding area. Exhibits 2 through 7, pages 3 through 8, show the project alignment on aerial and topographic mapping.

## *B. Proposed Alternatives and Geometrics*

Existing SR 15 has two 12-foot lanes with shoulders of variable width for the length of the project area. The speed limit ranges from 55 miles per hour (mph) in rural sections to 35 mph in the Walnut urban area. Existing US 72 is a four-lane divided highway with 12-foot lanes and 10-foot shoulders on the outer lanes and 8-foot shoulders on the inner lanes. The speed limit for US 72 ranges from 65 mph in rural sections to 45 mph near SR 15. Other roadways in the project area are narrow (1-0 to 12-foot lanes) with little to no shoulder.

Map Document: (P:\Project_Files\Mississippi\MS10-001_GSP_EcologyNoise_SR15\Mapping\GIS\Ex1_Noise_Overview.mxd) 12/1/2011 -- 12:18:47 PM sje

TENNESSEE

MISSISSIPPI

EXHIBITS 6 & 7

EXHIBITS 4 & 5

EXHIBITS 2 & 3

N

15

72

354

Brownfield

Walnut

Mount Moriah

Chalybeate

Tiplersville

Co Rd 102

Co Rd 113

Co Rd 116

Co Rd 118

Co Rd 119

Co Rd 120

Co Rd 121

Co Rd 123

Co Rd 124

Co Rd 125

Co Rd 126

Co Rd 114

Co Rd 115

Co Rd 117

Co Rd 302

Co Rd 304

Co Rd 305

Co Rd 306

Co Rd 215

Co Rd 274

Co Rd 262

Co Rd 235

Co Rd 62

Co Rd 273

Co Rd 276

Co Rd 308

Co Rd 310

Co Rd 312

Co Rd 307

Co Rd 392

Town

Alternative B Centerline

Alternative C Centerline

Alternative B-1 Right-of-way

Alternative B-2 Right-of-way

Alternative C Right-of-way

State Border

0 1,200 2,400 4,800

Feet

Exhibit 1
Site Overview
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

Map Document: (P:\Project_Files\Mississippi\MS10-001_GSP_EcologyNoise_SR15\Mapping\GIS\Ex2_Noise_South_Aerial.mxd) 12/1/2011 -- 11:15:04 AM sje

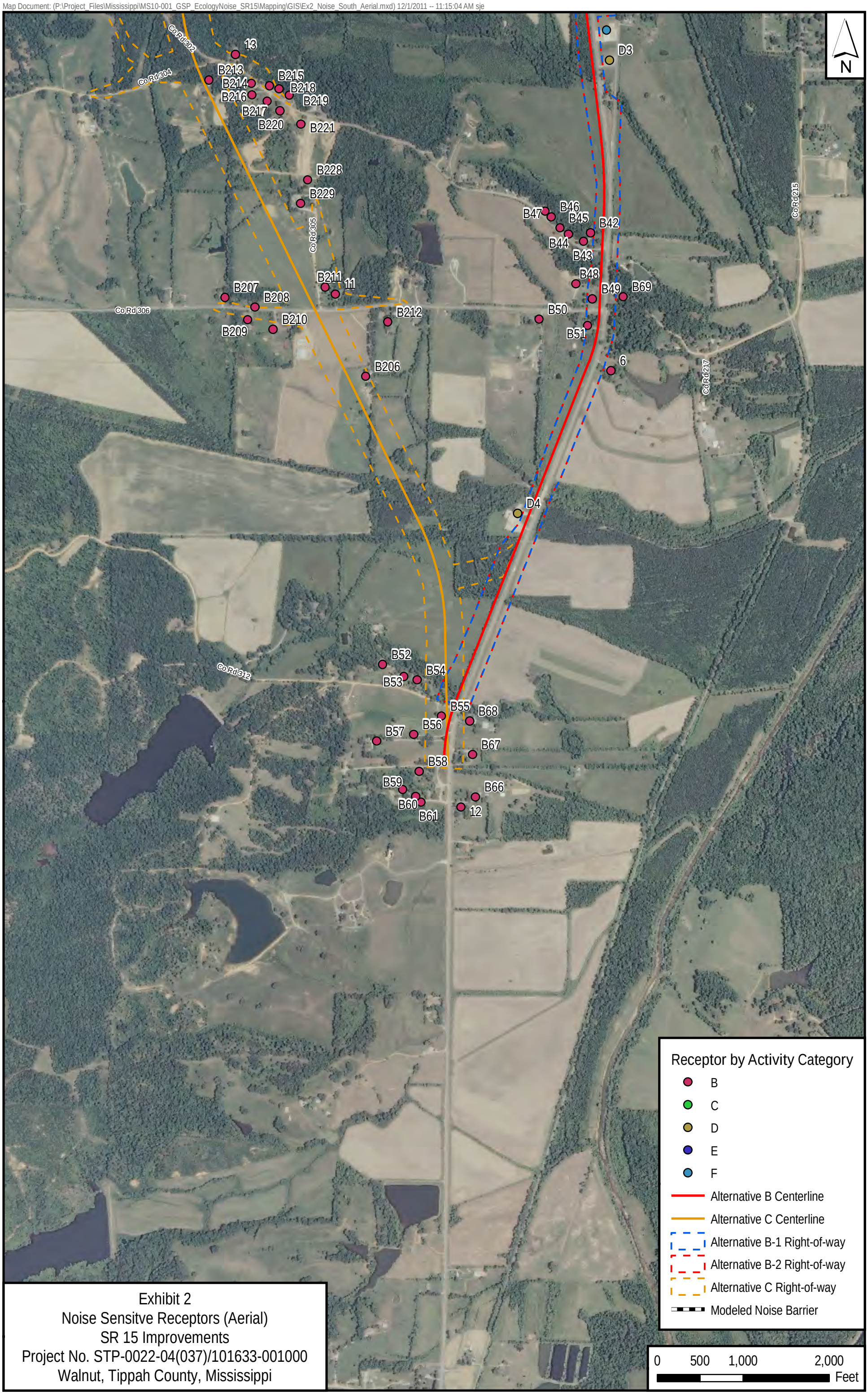


Exhibit 2
Noise Sensitve Receptors (Aerial)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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N

Receptor by Activity Category
- B
- C
- D
- E
- F
- Alternative B Centerline
- Alternative C Centerline
- Alternative B-1 Right-of-way
- Alternative B-2 Right-of-way
- Alternative C Right-of-way
- Modeled Noise Barrier

0 500 1,000 2,000 Feet

Exhibit 3
Noise Sensitve Receptors (Topographic)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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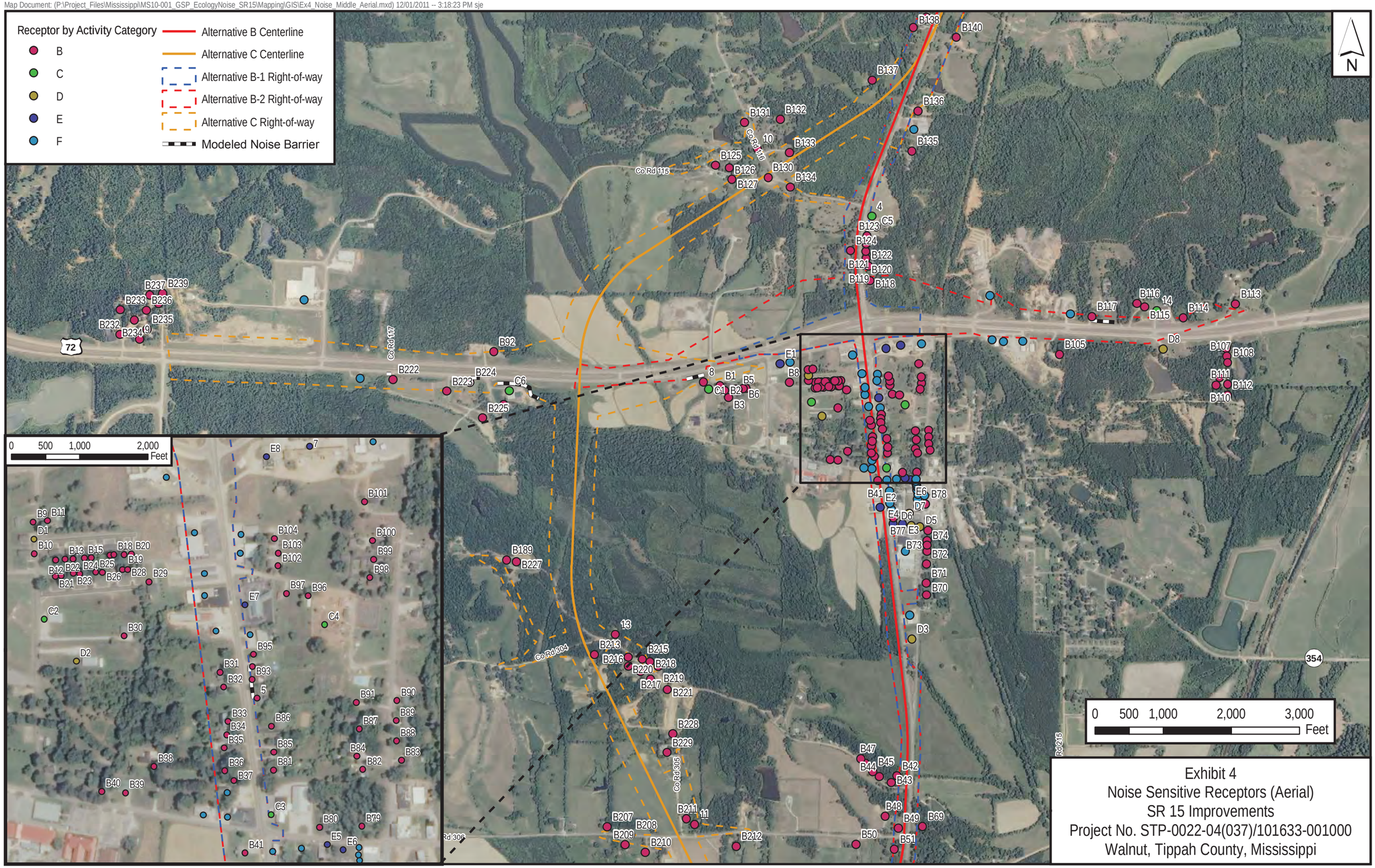


Exhibit 4
Noise Sensitive Receptors (Aerial)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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**Receptor by Activity Category**

- B
- C
- D
- E
- F

- Alternative B Centerline
- Alternative C Centerline
- Alternative B-1 Right-of-way
- Alternative B-2 Right-of-way
- Alternative C Right-of-way
- Modeled Noise Barrier

N

0 500 1,000 2,000 Feet

0 500 1,000 2,000 3,000 Feet

Exhibit 5
Noise Sensitive Receptors (Topographic)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

Map Document: (P:\Project_Files\Mississippi\MS10-001_GSP_EcologyNoise_SR15\Mapping\GIS\Ex6_Noise_North_Aerial.mxd) 12/1/2011 -- 11:37:52 AM sje

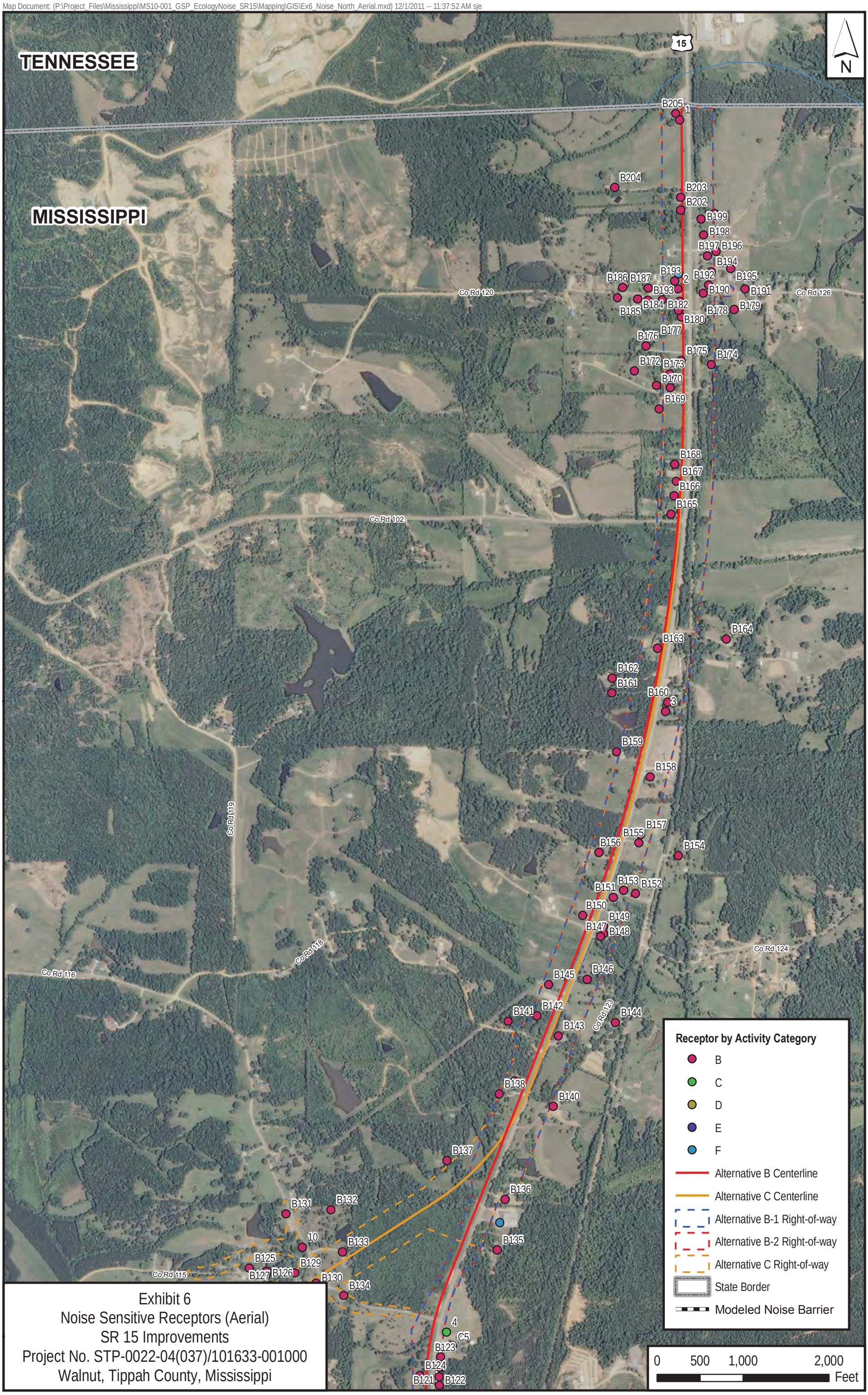


Exhibit 6
Noise Sensitive Receptors (Aerial)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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TENNESSEE

MISSISSIPPI

BASE LINE

HARDEMAN CO

TIPPAH CO

Hersey

Brownfield

Gane

Branch

Harmony Ch

Sandpit

CENTRAL GULF

BM 442

BM 460

BM 455

BM 459

BM 472

WT 540

Co Rd 102

Co Rd 115

Co Rd 116

Co Rd 118

Co Rd 119

Co Rd 120

Co Rd 123

Co Rd 124

Co Rd 126

B204 B205 B203 B202 B199 B198 B197 B196 B194 B193 B186 B187 B192 B195 B193 B190 B191 B185 B184 B182 B178 B179 B180 B177 B176 B175 B174 B172 B173 B170 B169 B168 B167 B166 B165 B164 B163 B162 B161 B160 B159 B158 B157 B155 B156 B154 B153 B152 B151 B150 B149 B147 B148 B145 B146 B141 B142 B144 B143 B138 B140 B137 B136 B135 B131 B132 B133 B125 B129 B127 B126 B130 B134 B123 B124 B121 B122

C5

Receptor by Activity Category

- B
- C
- D
- E
- F

Alternative B Centerline

Alternative C Centerline

Alternative B-1 Right-of-way

Alternative B-2 Right-of-way

Alternative C Right-of-way

State Border

Modeled Noise Barrier

0 500 1,000 2,000 Feet

Exhibit 7
Noise Sensitive Receptors (Topographic)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

Three typical sections are proposed for the Build Alternatives, as shown in Appendix A. A four-lane rural arterial typical section is proposed for Alternatives B-1 and B-2 outside of Walnut city limits and for the entire route of Alternative C. This typical section has 12-foot lanes with 10-foot shoulders on the outer lanes and 8-foot shoulders on the inner lanes, with centerlines for the directional traffic 125 feet apart. Within Walnut city limits, the typical section for Alternatives B-1 and B-2 is a five-lane urban arterial with a 14-foot center turn lane and two 12-foot lanes in each direction. Alternatives B-1 and B-2 also include a curb and gutter on both sides and a sidewalk to the west. Alternative B-2 also has a 4-lane rural arterial typical section for the proposed relocation of US 72. This typical section is the same as the other proposed four-lane rural arterial typical section except the centerlines for the directional traffic are only 88 feet apart. The design speed is 65 mph in rural sections and 50 mph in the Walnut city limits.

## II. FUNDAMENTALS OF SOUND AND NOISE

Traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). A sound level represents the level of the rapid air pressure fluctuations caused by sources such as traffic that are heard as noise. A decibel is a unit that relates the sound pressure of a noise to the faintest sound the young human ear can hear. The A-weighting refers to the amplification or attenuation of the different frequencies of the sound (subjectively, the pitch) to correspond to the way the human ear "hears" these frequencies.

Generally, when the sound level exceeds the mid-60 dBA range, outdoor conversation in normal tones at a distance of three feet becomes difficult. A 9 to 10 dBA increase in sound level is typically judged by the listener to be twice as loud as the original sound while a 9 to 10 dBA reduction is judged to be half as loud. Doubling the number of sources (*i.e.* vehicles) will increase the hourly equivalent sound level by approximately 3 dBA, which is usually the smallest change in hourly equivalent A-weighted traffic noise levels that individuals can detect without specifically listening for the change.

Because most environmental noise fluctuates from moment to moment, it is standard practice to condense data into a single level called the equivalent sound level ($L_{eq}$). The $L_{eq}$ is a steady sound level that contains the same amount of sound energy as the actual time-varying sound evaluated over the same time-period. The $L_{eq}$ averages the louder and quieter moments, but gives much more weight to the louder moments in the averaging. For traffic noise assessment purposes, $L_{eq}$ is typically evaluated over the worst-case one-hour period and is defined as $L_{eq(1h)}$.

## III. NOISE IMPACT CRITERIA

According to FHWA noise standards and MDOT noise policy, a traffic noise impact is considered to occur when either of the following conditions is predicted:

1. The worst-hour equivalent noise level predicted for the design year approaches (*i.e.* within 1 dBA) or exceeds the Noise Abatement Criteria (NAC) for the land use category affected (Table 1, page 10)
2. A substantial increase over existing noise level (≥ 15 dBA) is predicted for the design year; this criterion is independent of the NAC and may result in a defined noise impact even though the NAC may not be approached or exceeded

TABLE 1 – NOISE ABATEMENT CRITERIA

| Activity Category | $L_{AEQ}$(1H) (dBA) | Evaluation Location | Activity Description |
|---|---|---|---|
| A | 57 | Exterior | Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose |
| B* | 67 | Exterior | Residential |
| C* | 67 | Exterior | Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings |
| D | 52 | Interior | Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, and television studios |
| E* | 72 | Exterior | Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F |
| F | --- | --- | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing. |
| G | --- | --- | Undeveloped lands that are not permitted. |

* Includes undeveloped lands permitted for this activity category proposed for future development.
Source: 23 CFR 772, July 2010.

Activity Category A includes lands on which serenity and quiet are of extraordinary significance and which serve an important public need. Examples of lands that have been analyzed as Category A include the Tomb of the Unknown Soldier, a monastery, and outdoor prayer areas. MDOT will consider Category A sites on a case-by-case basis, as these land uses are not typically encountered.

Activity Category B includes exterior areas of single or multifamily homes and mobile home parks. Noise impacts are evaluated in exterior areas of frequent human use where traffic noise would interfere with normal conversation such as on balconies, patios or in the backyard of the residence. In multifamily units, balconies that have potential outdoor use and common areas, such as patios, clubhouses or pools are included in this category.

Activity Category C includes exterior areas of non-residential lands as listed in Table 1 under Activity Category C such as Section 4(f) properties, schools, parks, cemeteries, etc. These land uses are analyzed for traffic noise impacts in areas of frequent human use such as in school playgrounds, sports fields and similar areas.

Activity Category D includes certain land use facilities listed in Activity Category C that may have interior uses.

Activity Category E includes exteriors of developed lands that are less sensitive to highway noise. These land uses are analyzed for traffic noise impacts in exterior areas of frequent human use, such as a pool area or courtyard.

Activity Category F includes land uses that are not sensitive to highway traffic noise and do not require noise analysis.

Activity Category G includes undeveloped land. If proposed for development, the area shall be analyzed for traffic noise impacts using the activity category that best describes the proposed future land use. In areas regulated by local comprehensive planning and zoning requirements, future noise impacts are to be modeled and the information conveyed to local officials and included in the project environmental documentation.

MDOT will consider noise abatement measures whenever a traffic noise impact is predicted. Federal funds may be used for noise abatement measures when: 1) traffic noise impacts have been identified; and 2) abatement measures have been determined to be feasible and reasonable pursuant to MDOT's noise policy.

## IV. NOISE LEVEL MEASUREMENTS

According to MDOT policy, at least one noise measurement is to be made during peak hours for every 20 noise sensitive receptors identified. Each house, place of worship, school, apartment building, etc. will normally be considered to be a separate noise sensitive receptor; however; several trailer houses in a trailer park or other closely spaced noise sensitive receptors having the same noise environment may be grouped. An inventory of all existing activities, developed lands, and undeveloped lands for which development is planned, designed and programmed, which may be affected by noise from the proposed highway was made during a survey of the project area on October 17-18, 2011.

Based on this survey, existing noise levels were measured on October 17 to 20, 2011 at fourteen locations identified on Exhibits 2 through 7, pages 3 through 8. Noise monitoring was performed during the period of peak morning (6:30 a.m. through 8:30 a.m.) and/or afternoon (4 p.m. through 6 p.m.) traffic volumes. Noise levels were monitored for at least 15 minutes during high traffic volume. To perform the monitoring, the following equipment was utilized:

- Larson Davis Model 812 Type 1 Precision Sound Level Meter S/N 0750
- Larson Davis Model 828 Preamplifier S/N 2523
- Larson Davis Model 377A60 Microphone S/N 101572
- Larson Davis CAL200 Precision Acoustic Calibrator S/N 5121

The temperature ranged from 41 to 84 degrees Fahrenheit. Although rain conditions had recently occurred in the project area, the measurements were made during suitable weather conditions including dry roadways, no precipitation, and low winds. Traffic counts by vehicle type (automobiles, medium trucks, heavy trucks, buses and motorcycle) were taken, and average traffic speeds were observed during the noise level measurements. Because no traffic was recorded at three receptor locations, ambient noise levels were recorded. Field data sheets are presented in Appendix B.

Receptor locations were selected for modeling purposes because of accessibility, representative proximity to the roadway, and potential sensitivity to noise impacts. The fourteen field measured receptors are described in Table 2, page 13. Photographs of the field-measured locations are shown in a photo log in Appendix C.

## V. NOISE LEVEL ESTIMATES

FHWA TNM version 2.5 (February 2004) calculates highway traffic noise for specified receptor locations based on roadway geometry, vehicle volume, vehicle mix, vehicle speed, and intervening surface conditions. Sound levels are calculated as hourly equivalent levels ($L_{eq}$) based on previously determined reference energy mean emissions levels for each type of vehicle. FHWA TNM accounts for full throttle emissions of vehicles on upgrades or accelerating, atmospheric effects, vehicle speed, distance from roadway, and shielding from intervening objects. The model also allows for simulation of a noise barrier, if applicable.

Existing sound level measurements were used to model the existing conditions in FHWA TNM in order to validate the model. Noise levels calculated by the model for the observed traffic conditions are compared with the measured noise levels in Table 3, page 13. Measured and predicted values are for the worst-case scenario measurement. The measured values of the receptor are within ±3 dBA $L_{eq}$ of the modeled levels for all receptors except Receptors 5, 6 and 7. For each of these measurements, background noises artificially elevated the results. Measurements unaffected by these background sources were within ±3 dBA of the modeled levels. Thus, the model is considered validated at all locations. Electronic copies of FHWA TNM model input files are included in Appendix D.

Locations for noise sensitive receptors were modeled based exterior areas of human use as observed during field measurements and examination of aerial images. Elevations for all roadways and receptors were based upon design profiles where available and interpolation between topographic contours in areas outside of the existing or build alignments. Roadway widths were established to incorporate the shoulders of each lane.

Eight receptors were designated as Activity Category D receptors based on no outside areas of human use; therefore, the NAC for interior use applies to these locations. No interior sound level measurements were performed at these locations. According to FHWA policy, interior noise levels may be computed by subtracting noise reduction factors from the predicted exterior levels. Noise reduction factors are specified based on the building type and window condition. For the light-frame buildings with closed sash windows observed in the area, a noise reduction factor of 20 dBA applies and was utilized to assess impacts.

## VI. TRAFFIC

Design hour volume (DHV) traffic data is required for each roadway segment included in the FHWA TNM model. DHV traffic data referenced in this analysis was provided by Gresham, Smith and Partners on October 14, 2011. Turning movement data was used to sum directional traffic for each segment, with the worst-case traffic utilized in areas for which two differing sums were generated based on traffic projections. A copy of relevant worksheets are contained in Appendix E. For roadways in which no forecasts were made, field observed traffic counts were utilized where available.

TABLE 2 – IDENTIFICATION OF RECEPTORS

| Noise Receptor | Description | Activity Category | NAC (dBA) | Measurement Type |
|---|---|---|---|---|
| 1 | 31846 SR 15 | B | 67 | Traffic Count and Sound |
| 2 | 20 CR 120 | B | 67 | Traffic Count and Sound |
| 3 | 30539 SR 15 | B | 67 | Traffic Count and Sound |
| 4 | Harmony Cemetery, SR 15 | C | 67 | Traffic Count and Sound |
| 5 | 28380 SR 15 | B | 67 | Traffic Count and Sound |
| 6 | 27100 SR 15 | B | 67 | Traffic Count and Sound |
| 7 | Value Inn (25 rooms) | E | 67 | Traffic Count and Sound |
| 8 | 161 McCoy Str | B | 67 | Traffic Count and Sound |
| 9 | Trailer on unnamed road off of US 72 just west of CR 144 | B | 67 | Traffic Count and Sound |
| 10 | 321 CR 116 | B | 67 | Ambient Sound |
| 11 | 3601 CR 306 | B | 67 | Ambient Sound |
| 12 | 25980 SR 15 | B | 67 | Traffic Count and Sound |
| 13 | First home east of CR 304 on CR 302 | B | 67 | Traffic Count and Sound |
| 14 | Abundant Life Tabernacle, US 72 | C | 67 | Ambient Sound |

TABLE 3 – MEASURED AND PREDICTED NOISE LEVELS FOR MODEL VALIDATION ($L_{EQ}$)

| Noise Receptor | Date | Time | Measured (dBA) | Predicted (dBA) | Difference (dBA) |
|---|---|---|---|---|---|
| 1 | 10/18/2011 | 6:44 | 62 | 63 | 1 |
| 2 | 10/17/2011 | 16:22 | 67 | 67 | 0 |
| 3 | 10/17/2011 | 16:01 | 63 | 63 | 0 |
| 4 | 10/18/2011 | 7:42 | 67 | 64 | 3 |
| 5 | 10/17/2011 | 17:34 | 68[1] | 63 | 5 |
| 5 | 10/18/2011 | 8:02 | 67 | 64 | 3 |
| 6 | 10/18/2011 | 8:22 | 60 | 58 | 2 |
| 6 | 10/20/2011 | 7:51 | 63[2] | 58 | 5 |
| 7 | 10/19/2011 | 6:58 | 63[3] | 57 | 6 |
| 7 | 10/20/2011 | 6:52 | 59 | 56 | 3 |
| 8 | 10/20/2011 | 7:12 | 64 | 62 | 2 |
| 9 | 10/20/2011 | 7:31 | 63 | 61 | 2 |
| 10 | 10/19/2011 | 9:22 | 47 | Ambient – No traffic | |
| 11 | 10/19/2011 | 8:57 | 45 | Ambient – No traffic | |
| 12 | 10/20/2011 | 8:11 | 61 | 63 | 2 |
| 13 | 10/19/2011 | 8:36 | 45 | Ambient – No traffic | |
| 14 | 10/20/2011 | 6:33 | 54 | 57 | 3 |

[1] Leafblower in distance artificially elevated measurement; other measurement at this receptor validates
[2] Dog barking and rooster crowing artificially elevated measurement; other measurement at this receptor validates
[3] When large background noise source removed, measurement was 60 dBA and validates; other measurement at this receptor also validates

## VII. EXISTING NOISE ENVIRONMENT

Two hundred sixty-nine (269) noise-sensitive facilities are located within the proposed project area. These facilities consist of 244 Activity Category B receptors, eight Activity Category C receptors, eight Activity Category D receptors, and nine Activity Category E receptors (Appendix F, Table 1.) Under existing conditions, two of these facilities have traffic noise levels approaching or exceeding NAC levels. The NAC for exterior areas is 67 dBA for Activity Categories B and C and is 72 dBA for Activity Category E. For Activity Category D interiors areas, the NAC is 52 dBA. Receptors B222 and B224, residences located south of US 72 between CR 115 and McCoy St, were predicted to be impacted under existing conditions. A minimum exterior noise level of 45 dBA was used for receptors distant from traffic noise sources, based on the ambient noise measurement levels.

## VIII. DESIGN YEAR (2040) NO-BUILD NOISE ENVIRONMENT

For the 2040 No-Build Alternative, noise levels at noise sensitive facilities located along the proposed project are predicted to be 0 to 4 dBA higher than existing noise levels (Appendix F, Table 1). This increase in noise levels is due to increases in traffic on existing roadways. Under the No-Build Alternative, nine receptors are predicted to be impacted: three residences located south of US 72 between CR 115 and McCoy St (B222, B224 and 8), two located west of SR 15, south of CR 120 (B175 and B177), one located east of SR 15 near CR 123 (B143), and three located west of SR 15 between CR120 and the state line (B202, B203 and 2).

## IX. DESIGN YEAR (2040) BUILD ALTERNATIVE B-1 NOISE ENVIRONMENT

If Alternative B-1 is constructed, 61 of the 269 total receptors, including 60 residences and one commercial business, fall within the right-of-way of the proposed roadway and would be taken. Of the remaining receptors, traffic noise is predicted to impact 12 receptors due to an approach or exceedance of the NAC. Impacted receptors include three residences located south of US 72 between CR 115 and McCoy St (B222, B224 and 8), one residence north of US 72 and east of SR 15 (B117), two residences east of SR15 between Munn Ave and Commerce St (5 and B93), four residences on SR 15 between CR 115 and US 72 (B120 – B123), Harmony Cemetery (4), and Christ Temple Church (C6). No impacts were predicted to occur due to a substantial increase (greater than 15 dBA) from the existing noise levels. The noise levels for Build Alternative B-1 are predicted to range from 0 to 6 dBA higher than the existing noise levels. Detailed results for each noise sensitive receptor are located in Appendix F, Table 1.

## X. DESIGN YEAR (2040) BUILD ALTERNATIVE B-2 NOISE ENVIRONMENT

If Alternative B-2 is constructed, 64 receptors, including 63 residences and one commercial business, fall within the right-of-way of the proposed roadway and would be taken. Of the remaining receptors, traffic noise is predicted to impact 10 receptors due to an approach or exceedance of the NAC. Impacted receptors include two residences located south of US 72 between CR 115 and McCoy St (B222 and B224), two residences east of SR15 between Munn Ave and Commerce St (5 and B93), four residences on SR 15 between CR 115 and US 72 (B120 – B123), Harmony Cemetery (4), and Christ Temple Church (C6). No impacts were predicted to occur due to a substantial increase (greater than 15 dBA) from the existing noise levels. The noise levels for Build Alternative B-2 are predicted to range from one dBA lower to six dBA higher than the existing noise levels. Detailed results for each noise sensitive receptor are located in Appendix F, Table 1.

## XI. DESIGN YEAR (2040) BUILD ALTERNATIVE C NOISE ENVIRONMENT

If Alternative C is constructed, 69 receptors, all of which are residences, fall within the right-of-way of the proposed roadway and would be taken. Of the remaining receptors, traffic noise is predicted to impact one residence north of US 72 and east of SR 15 (B117) due to an exceedance of the NAC. No impacts were predicted to occur due to a substantial increase (greater than 15 dBA) from the existing noise levels. The noise levels for Build Alternative C are predicted to range from five dBA lower to 10 dBA higher than the existing noise levels. Detailed results for each noise sensitive receptor are located in Appendix F, Table 1.

## XII. SUMMARY OF RESULTS

Two hundred forty-four (244) Activity Category B residences; eight Activity Category C churches, parks, and cemeteries; eight Activity Category D indoor uses; and nine Activity Category E commercial noise sensitive receptors are located in the project area. The predicted impacts for each alternative are summarized in Table 4. For the 2040 No-Build Alternative, nine residences are predicted to be impacted due to noise levels above the NAC. For Build Alternative B-1, 10 residences, Harmony Cemetery and Christ Temple Church are predicted to be impacted due to noise levels above the NAC and 60 residences and one commercial receptor would be within the right-of-way. For Build Alternative B-2, eight residences, Harmony Cemetery and Christ Temple Church are predicted to be impacted due to noise levels above the NAC and 63 residences and one commercial receptor would be within the right-of-way. For Build Alternative C, one residence is predicted to be impacted due to noise levels above the NAC and 69 residences would be within the right-of-way. No receptors were predicted to be impacted due to a substantial noise increase.

TABLE 4 – IMPACTED NOISE RECEPTORS BY ALTERNATIVE

| | Impacted Receptors by Activity Category | | | | In Right-of-Way | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Alternative | B | C | D | E | B | C | D | E | Impacts |
| Total Receptors | 244 | 8 | 8 | 9 | - | | | | 0 |
| 2011 Existing | 2 | 0 | 0 | 0 | 0 | | | | 2 |
| 2040 No-Build Alternative | 9 | 0 | 0 | 0 | 0 | | | | 9 |
| 2040 Build Alternative B-1 | 10 | 2 | 0 | 0 | 60 | 0 | 0 | 1 | 73 |
| 2040 Build Alternative B-2 | 8 | 2 | 0 | 0 | 63 | 0 | 0 | 1 | 74 |
| 2040 Build Alternative C | 1 | 0 | 0 | 0 | 69 | 0 | 0 | 0 | 70 |

## XIII. TRAFFIC NOISE ABATEMENT

### *A. Abatement Measures Considered*

MDOT guidelines state that noise abatement measures should be considered for receptors with predicted traffic noise impacts. Twelve receptors were impacted by one or more Build Alternatives including the following receptors: 4 (Harmony Cemetery), 5, 8, B93, B117, B120, B121, B122, B123, B222, B224, and C6 (Christ Temple Church). Noise abatement measures can include improved traffic management, alterations to the horizontal or vertical alignments, and acquisition of noise buffer zones. If these measures are not appropriate, not effective, or not feasible, the installation of structural noise barriers can be evaluated with respect to feasibility and reasonableness.

A reduction of the speed limit or other traffic management would not meet the purpose and

need of the project, which is to provide a high-speed access corridor. Thus, traffic management measures are not appropriate abatement measures. The evaluated Build Alternatives were selected due to many factors and constraints, including impacting the least number of facilities and avoidance of several cemeteries in the area. The alternatives have differing numbers of traffic noise impacts with Build Alternative B-1 with the most (12), followed by Build Alternative B-2 (10), and Build Alternative C with the least impacts (1). By selecting Build Alternative B-2, impacts to receptors 8 and B117 can be avoided. By selection of Build Alternative C, impacts to the following receptors may be avoided: 4 (Harmony Cemetery), 5, 8, B93, B120, B121, B122, B123, B222, B224, and C6 (Christ Temple Church).

### *B. Noise Barrier Evaluation*

Because other abatement measures are not appropriate, not effective, or not feasible, the installation of structural noise barriers was evaluated each of these 12 locations for the 2040 design year. According to MDOT policy, noise barriers must be both feasible and reasonable to be implemented as an abatement measure.

Engineering or constructability issues may render an abatement measure infeasible. In determining if site characteristics are suitable for barrier construction, MDOT shall consider numerous factors including topography; animal migratory paths; cultural resources such as historic places; access requirements for driveways, ramps, etc.; maintenance issues and utility encumberments; the presence of local cross streets; and other noise sources in the area, such as aircraft, trains, or industry. It is MDOT policy that construction of a noise barrier is not feasible if a noise reduction of at least 5 dBA cannot be achieved for at least one impacted receptor.

Because of the access requirements of driveways, most barriers were restricted to short segments between driveways. All barriers were modeled along the edge of the right-of-way at a maximum height of 20 feet. The locations of the modeled barriers are shown in Exhibits 2 through 7, pages 3 through 8.

Noise barriers for receptors 5, B93, B117, B120, B121, B122, B222, B224, and C6 were all found to be unfeasible since a 5 dBA noise reduction could not be achieved at the impacted receptors. Therefore, no further assessment was required at these locations. Currently, receptor 4 is not considered feasible because it would limit the points of ingress or egress to the roadway. Noise barriers were found to be feasible for receptors 8 and B123. Additional analysis was conducted for receptors 8 and B123 to evaluate whether the barriers were reasonable.

In order to determine whether a noise barrier is reasonable, MDOT policy has developed eight reasonableness factors. 23 CFR 772.13(d)(2)(iv) requires that reasonableness factors 1, 2, and 3 listed below must collectively be achieved in order for a noise abatement measure to be deemed reasonable. In addition to the required reasonableness factors, optional reasonableness factors 4 through 8 listed below may be considered. However, no single optional reasonableness factor can be used to determine reasonableness. The eight reasonableness factors are:

<u>Required Factors:</u>

1. A majority of residents and property owners (> 50 percent) of the benefited receptors (≥ 5 dBA noise reduction from the noise barrier) must want a noise barrier
2. The total barrier cost must be ≤ $30,000 per benefited receptor
3. Each barrier must achieve the noise reduction design goal (≥ 7 dBA) at 10 percent or more of the benefited receptors

Optional Factors:

4. Percentage of impacted receptors developed before the date of public knowledge (date of approval of CEs, FONSIs, or RODs) of the project (more consideration if >30 percent)
5. Percentage of impacted receptors that predated initial highway construction (more consideration if >30 percent).
6. Amount future Build noise levels increase over Existing noise levels (more consideration if ≥ 5 dBA).
7. Amount future Build noise levels increase over future No-Build noise levels (more consideration if ≥ 3 dBA)
8. Future Build noise levels exceed the NAC (more consideration if exceeds).

For each proposed noise barrier location, a noise barrier evaluation form is completed indicating the feasibility and reasonableness of the abatement measure.

The total barrier cost will include the cost of construction (material and labor), the cost of additional right-of-way, the additional cost of relocating utilities and any other costs associated with the barrier. An estimated cost of $25 per square foot was assumed for each barrier. All receptors with noise reductions of 5 dBA or more will be counted. Each house will be counted as one receptor.

It is state policy that the final determination of reasonableness will be made only after a careful and thorough consideration of a wide range of criteria. However, noise barriers will definitely not be built if a majority of benefited receptors do not want them. For this report, it was assumed that the benefited receptors would want a noise barrier.

For the two locations in which noise barriers were found to be feasible, Receptors 8 and B123, a summary of the evaluation results are found in Table 5.

TABLE 5 – NOISE BARRIER EVALUATION SUMMARY

| Receptor | Impacted on Build Alternative | | | Avg. Height (feet) | Length (feet) | Area (feet$^2$) | Total Cost | Feasible (>5 dBA Reduction) | Cost / Receptor | % Benefited with Design Goal Reduction (7dBA) |
|---|---|---|---|---|---|---|---|---|---|---|
| | B-1 | B-2 | C | | | | | | | |
| 8 | Y | N | N | 20 | 263 | 5262 | $131,550 | 1 | $131,550 | 0% |
| B123 | Y | Y | N | 20 | 175 | 3495 | $ 87,384 | 1 | $ 87,384 | 100% |

Noise barrier evaluation forms indicating the feasibility and reasonableness of each barrier are located in Appendix G. For Receptor 8, a barrier was found not to be reasonable because the cost per benefited receptor exceeded $30,000 and no receptors achieved the design goal reduction (7 dBA). For B123, a noise barrier was found not to be reasonable because the cost per receptor exceeded the $30,000 limit.

Based on the above considerations, no noise barriers are likely to be implemented for this project.

## XIV. CONSTRUCTION NOISE ABATEMENT

If required, contractors can utilize the following noise abatement measures during road construction in the vicinity of noise sensitive areas such as schools, residences, and churches:

- Provide soundproof housing or enclosures for stationary noise-producing machinery such as drills, augers, cranes, derricks, compactors, pile drivers, etc.

- Provide efficient silencers on air intakes of equipment
- Provide efficient intake and exhaust mufflers of internal combustion engines
- Perform proper maintenance on all noise producing equipment to prevent excessive rattling and vibration of metal surfaces
- Restrict construction operations in the vicinity of noise sensitive locations to periods of the day when excessive noise would be least harmful
- Take other measures as necessary to prevent construction noise from becoming a public health nuisance or detriment to human health

MDOT has the responsibility for monitoring construction noise levels and will advise the contractor of any violations.

## XV. FHWA POLICY REGARDING LAND USE DEVELOPMENT AND FUTURE NOISE ABATEMENT

The lack of consideration of highway traffic noise in land use planning and development at the local level has added to the highway traffic noise problem. Many developments now experiencing high noise levels were constructed adjacent to major highways long after these highways were proposed and constructed. This lack of concern for predictable high noise levels by local planning and zoning agencies and by developers has affected citizens and caused MDOT many problems. Since MDOT does not have any authority over land use planning and development, MDOT can only encourage local officials and developers to consider highway traffic noise in the planning, zoning and development of property near existing and proposed highways. MDOT has committed to sending a letter to local officials at least ever two years to encourage them to consider highway traffic noise in land use planning and development.

For future development, local officials are encouraged to establish ordinances to require future development to be set back a minimum distance from the highway such that the NAC is not exceeded for the land use (residential or commercial). Appropriate setback distances can be established from the noise contours indicated in Appendix F, Table 2. Local officials and developers are also encouraged to visit the FHWA Highway Traffic Noise website (www.fhwa.dot.gov/environment/noise/) to learn more about Noise Compatible Planning.

## XVI. REFERENCES

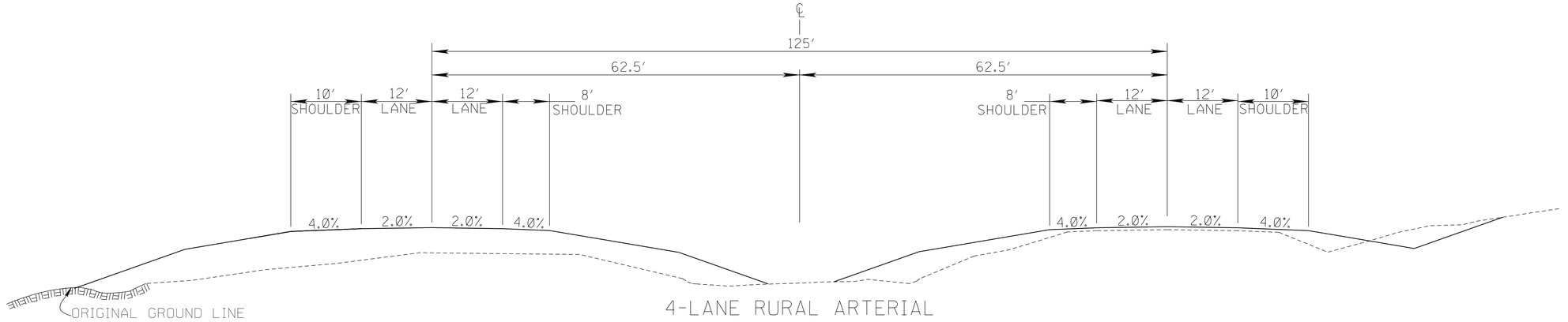
Federal Highway Administration (FHWA). 2010. Procedures for Abatement of Highway Traffic Noise and Construction Noise. (Code of Federal Regulations, Title 23, Part 772.)

Mississippi Department of Transportation (MDOT). 2011. Highway Traffic Noise Policy. Jackson, Mississippi. Effective July 13, 2011.

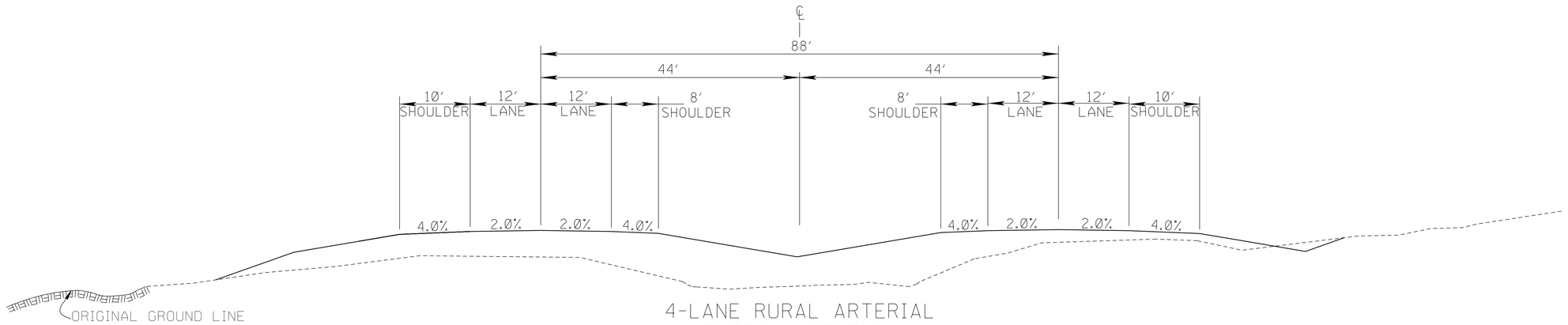
# APPENDICES

# APPENDIX A – TYPICAL SECTIONS

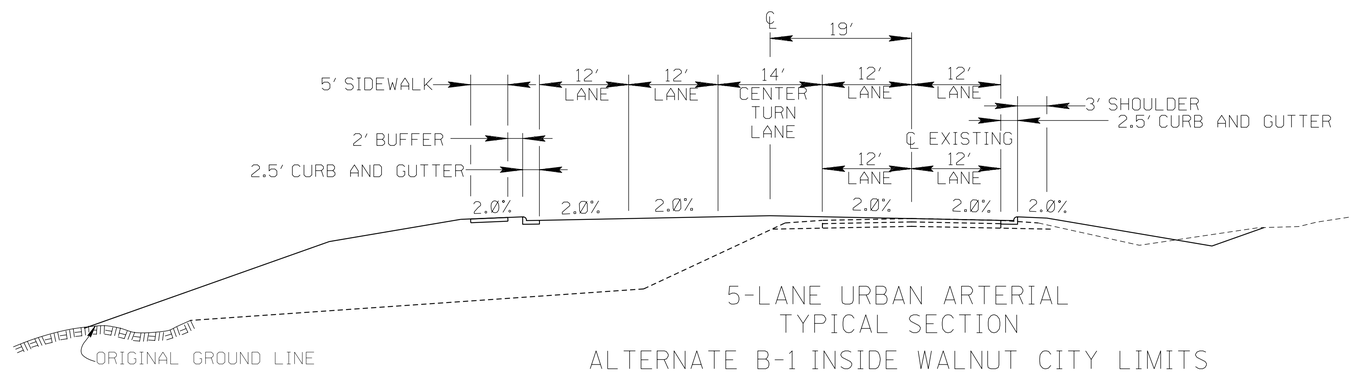
| STATE | PROJECT NO. |
|---|---|
| MISS. | |




4-LANE RURAL ARTERIAL
TYPICAL SECTION
ALTERNATE B-1 OUTSIDE WALNUT CITY LIMITS
ALTERNATE B-2 OUTSIDE WALNUT CITY LIMITS
ALTERNATE C FOR ENTIRE ROUTE




4-LANE RURAL ARTERIAL
TYPICAL SECTION
RELOCATED US72 (ALTERNATE B-2)




5-LANE URBAN ARTERIAL
TYPICAL SECTION
ALTERNATE B-1 INSIDE WALNUT CITY LIMITS
ALTERNATE B-2 INSIDE WALNUT CITY LIMITS

PLAN
ROADWAY DESIGN DIVISION
MISSISSIPPI DEPARTMENT OF TRANSPORTATION

7/7/2011 16:10:55 TS-01.DGN

BY | REVISION | DATE

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

# TYPICAL SECTIONS

PRELIMINARY
NOT FOR
CONSTRUCTION

WORKING NUMBER

SHEET NUMBER

FILENAME: TS-01.DGN
DESIGN TEAM ____ CHECKED ____ DATE ____

# APPENDIX B – FIELD DATA SHEETS

PKS 20-23

# Third Rock Noise Monitoring Data Sheet

Project #: MS11-001 Proj. Desc: SR 15
Site #: 1 Desc: @ State Line
Analyst: S. EVANS, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/18/11 | 0644 | 15/00 | 59 | 0-5 | Hazy | 114.0 | 62.1 | 43.3 | 82.3 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR15 ←N | 33 | 0 | 4 | 0 | 0 | 55 | 58 |
| →S | 17 | 1 | 3 | 0 | 0 | 55 | 58 |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/17/2011 | 1641 | 15 00 | 84 | 5-10 | NONE | 114.0 | 62.0 | 36.2 | 79.8 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR15 ←N | 27 | 1 | 3 | 0 | 0 | 55 | 56 |
| →S | 35 | 0 | 4 | 0 | 0 | 55 | 56 |
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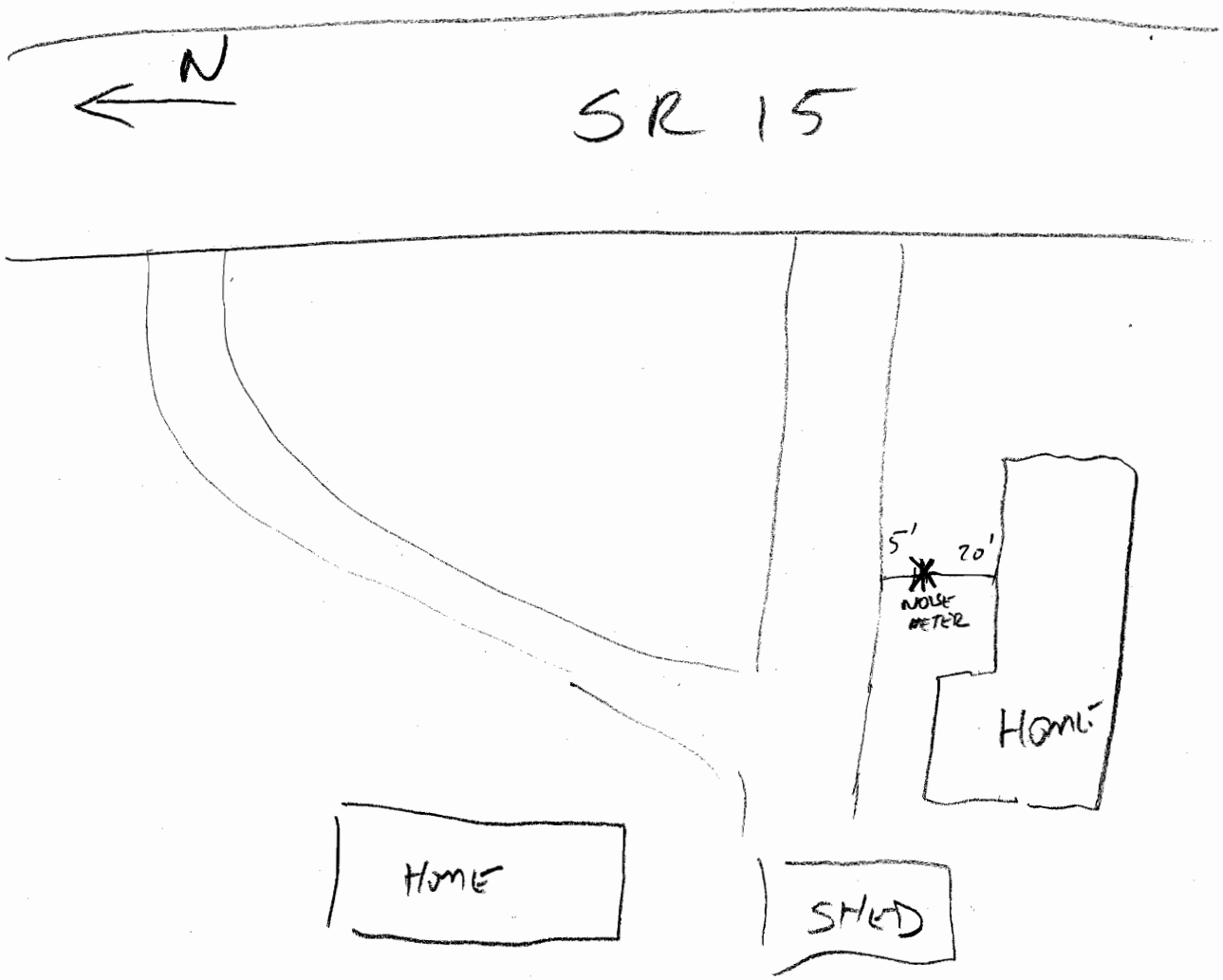
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

Model Building for Shielding

# Third Rock Noise Monitoring Data Sheet 16-19

Project #: MS11-001 Proj. Desc: SR 15
Site #: 2 Desc: 20CR120
Analyst: S. EVANS, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121

Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/18/11 | 0703 | | 59 | 0-5 | Hazy | 114.0 | 65.3 | 35.0 | 82.8 |

Background Noise: BIRDS CHIRPING THROUGHOUT = AMBIENT

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR15 ← N | 30 | 5 | 4 | 1 | 0 | 55 | 57 |
| → S | 29 | 3 | 5 | 0 | 0 | 55 | 55 |
| CR120 ↑ E | 1 | 0 | 0 | 1 | 0 | ? | 0-25 |
| ↓ W | 1 | 0 | 0 | 1 | 0 | ? | 0-25 |
| | | | | | | | |
| | | | | | | | |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/17/2011 | 1622 | 15/00 | 84 | 5-10 | None | 114.0 | 66.6 | 38.8 | 87.9 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR15 ← N | 32 | 0 | 8 | 0 | 1 | 55 | 54 |
| → S | 32 | 2 | 6 | 0 | 0 | 55 | 54 |
| CR120 ↑ E | 0 | 0 | 0 | 0 | 1 | ? | 0-25 |
| ↓ W | 1 | 0 | 0 | 0 | 1 | ? | 0-25 |
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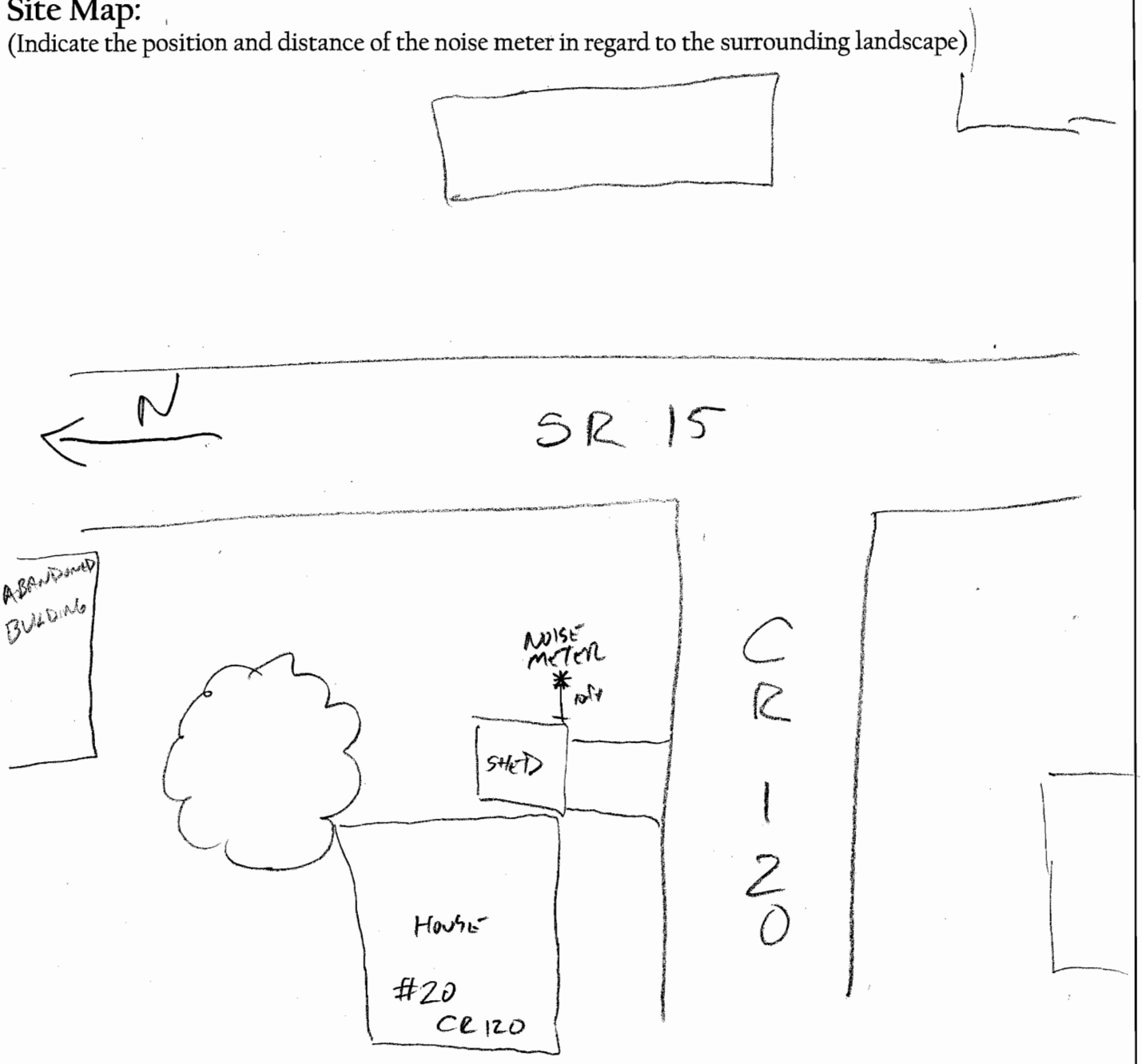
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

NONE, Abandoned Building to north may shield slightly.

# Third Rock Noise Monitoring Data Sheet pics 12-15

Project #: 11-031 Proj. Desc: SR 15
Site #: 3 Desc: in front of house
Analyst: Steve E, Joe W

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

~~AM~~ PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/17/11 | 16:01 | 15/00 | 84 | 5-10 | None | 114.0 | 63.2 | 36.4 | 78.9 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| St Hwy 15 | | | | | | | |
| S ← | 35 | 2 | 7 | 0 | 0 | 55 | 54 |
| N → | 44 | 2 | 5 | 0 | 0 | 55 | 54 |
| | | | | | | | |
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~~PM~~ AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/16/11 | 0722 | | 59 | 0-2 | Hazy | 114.0 | 61.1 | 34.6 | 78.4 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 ← S | 30 | 0 | 1 | 1 | 0 | 55 | 58 |
| → N | 18 | 1 | 4 | 0 | 0 | 55 | 55 |
| | | | | | | | |
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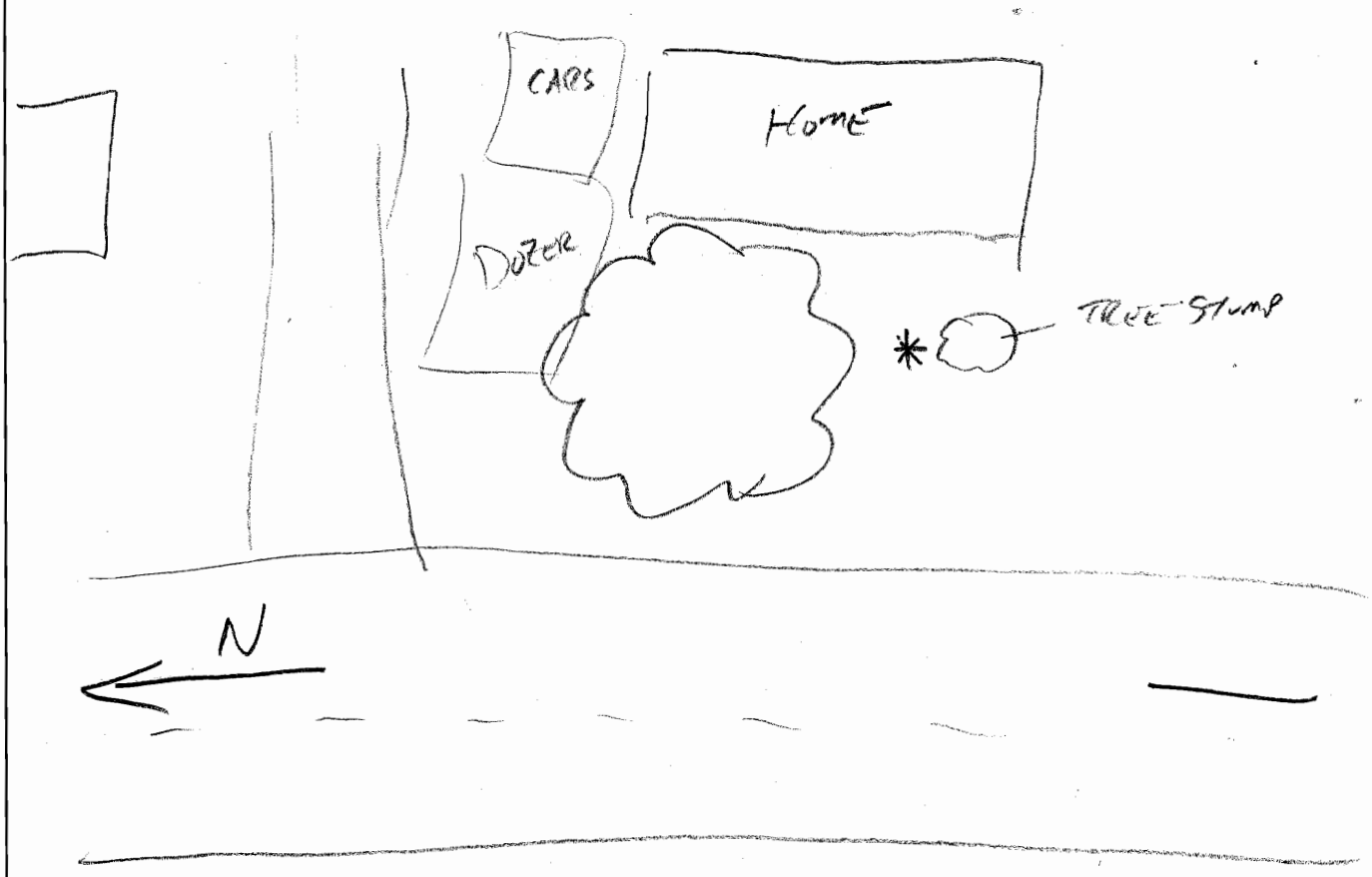
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

NONE

# Third Rock Noise Monitoring Data Sheet

Pics 24-27

Project #: MSII-001 Proj. Desc: SR 15
Site #: 4 Desc: Harmony Cemetery
Analyst: S. Evans, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121

Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/18/11 | 742 | 15/00 | 57 | 0-5 | Hazy | 114.0 | 66.6 | 43.0 | 85.6 |

Background Noise: IDLING SEMI IN PARKING LOT - 3-8 minutes of reading

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 ← S | 31 | . 1 | ∴ 3 | 0 | 0 | 45 | 45-50 |
| → N | 30 | . 1 | □ 8 | 0 | 0 | 45 | 40 |
| CR 115 ↓ E | ∴ 2 | 0 | 0 | 0 | 0 | — | 0-25 |
| ↑ W | . 1 | 0 | 0 | 0 | 0 | — | 0-25 |
| | | | | | | | |
| | | | | | | | |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/17/11 | 1703 | 15/00 | 84 | 5-10 | None | 114.0 | 65.4 | 40.5 | 81.6 |

Background Noise: RADIO IN CAR @ 8:00

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 → N | 44 | ∴ 2 | ☑ 9 | 0 | 0 | 45 | 40 |
| ← S | 41 | ∴ 4 | □ 8 | 0 | 0 | 45 | 40 |
| CR 115 ↓ E | ∴ 4 | . 1 | 0 | 0 | 0 | — | 15-25 |
| ↑ W | ∴ 3 | 0 | 0 | 0 | 0 | — | 15-25 |
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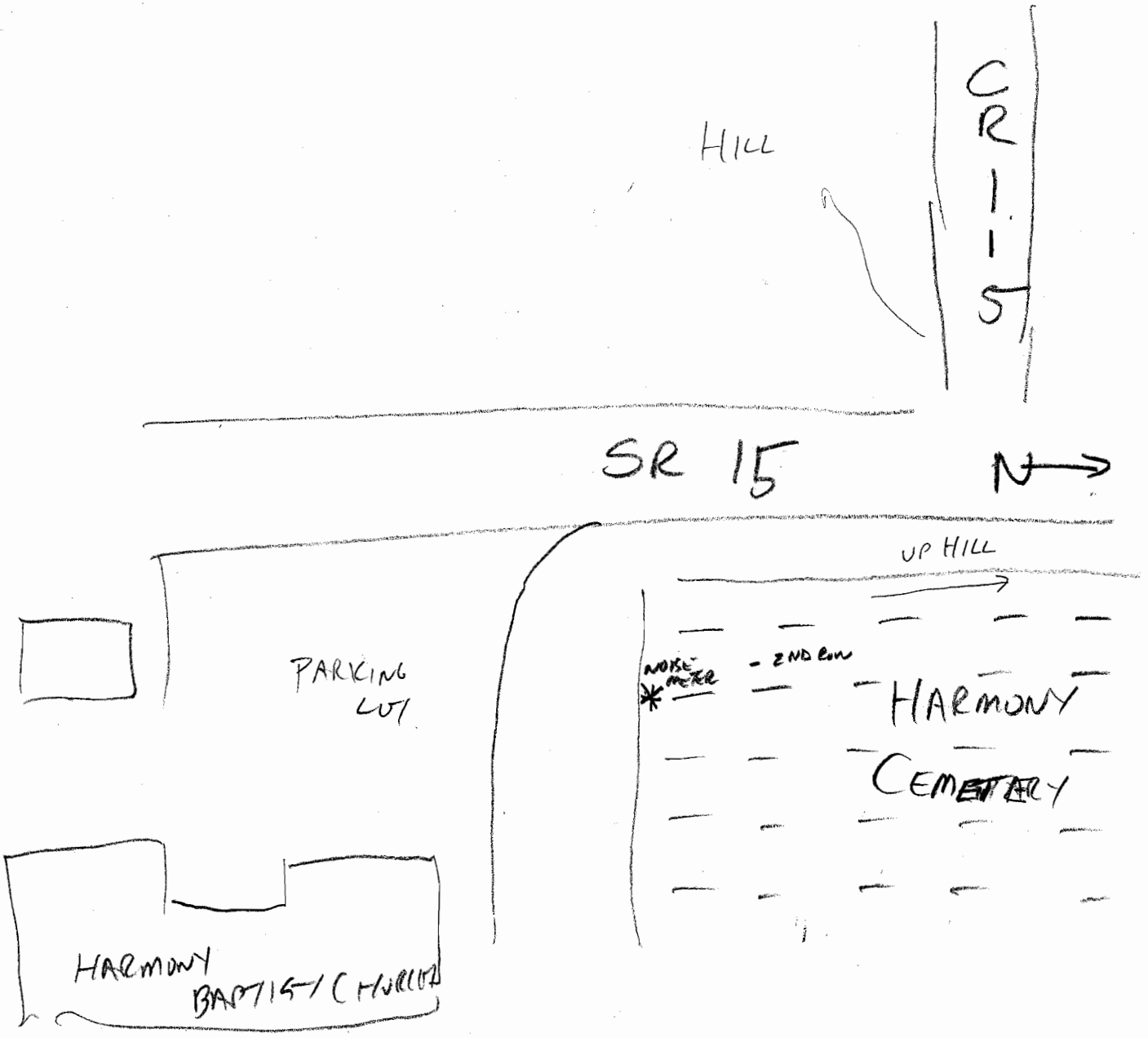
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

NONE - SLIGHT HILL IN CEMETERY

Cemetery - Daily - 5-6 - 4hrs
Weekly - 40 people - 3 hrs, funeral

Spoke w/ caretaker / churchmember

Church
S 9-12 120 people 2nd 80 1st service
W 3-6 80 kids
6:30-8 60-80 services

PICS 28-31

# Third Rock Noise Monitoring Data Sheet

Project #: MS11-001 Proj. Desc: SR15

Site #: 5 Desc: 28380 SR15

Analyst: S Evans, J Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121

Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/18/11 | 802 | 15/00 | 57 | 0-5 | Hazy | 114.0 | 67.2 | 46.7 | 82.5 |

Background Noise: Leaf blower @ 14:00 in — 5 hours down

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 S← | 44 | 2 | 3 | 0 | 0 | 35→25 | 37 |
| N→ | 34 | 0 | 1 | 0 | 0 | 25→35 | 37 |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/17/11 | 1734 | 15/00 | 64 | 0-5 | 10% | 114.0 | 68.1 | 42.4 | 88.9 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 S← | 42 | 1 | 1 | 0 | 0 | 35→25 | 42 |
| N→ | 44 | 6 | 5 | 0 | 0 | 25→35 | 35 |
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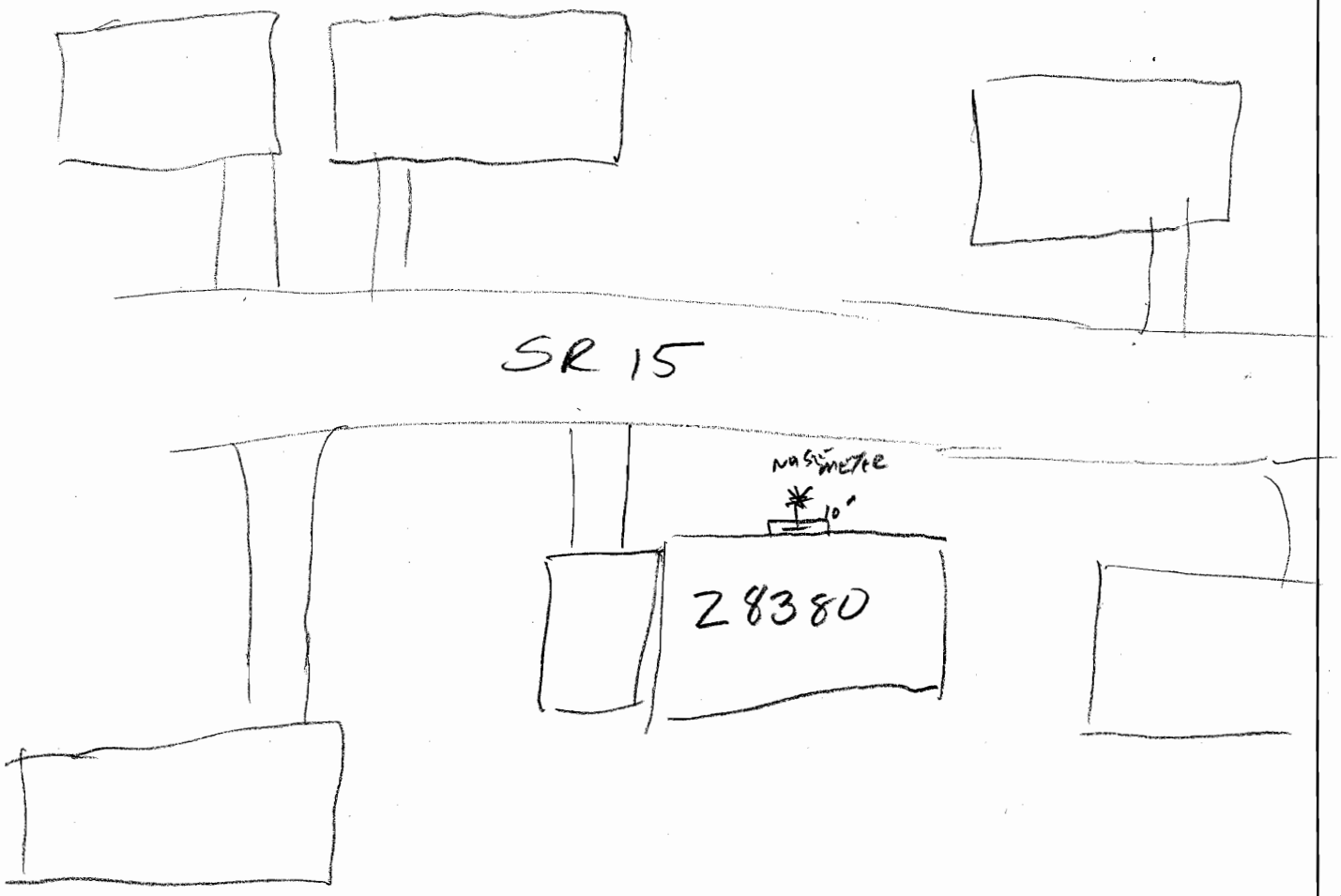
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

: PICS 32-35

# Third Rock Noise Monitoring Data Sheet

Project #: M311-01 Proj. Desc: SR 15
Site #: 6 Desc: 27100 SR15
Analyst: S. EVANS, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121

Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/18/11 | 0822 | 15/00 | 59 | 0-5 | Hazy | 114.0 | 59.8 | 38.9 | 73.9 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR15 ← S | 24 | 1 | 4 | 0 | 0 | 55 | 54 |
| → N | 21 | 4 | 5 | 0 | 0 | 55 | 54 |
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~~PM~~ AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/20/2011 | 751 | 15/00 | 49 | 2-5 | NONE | 114.0 | 63.3 | 42.9 | 80.0 |

Background Noise: DOG BARK @0:30, Chickens clucking, rooster (1-8), door slamming

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 ← S | 22 | 3 | 6 | 1 | 0 | 55 | 55 |
| → N | 25 | 5 | 1 | 1 | 0 | 55 | 55 |
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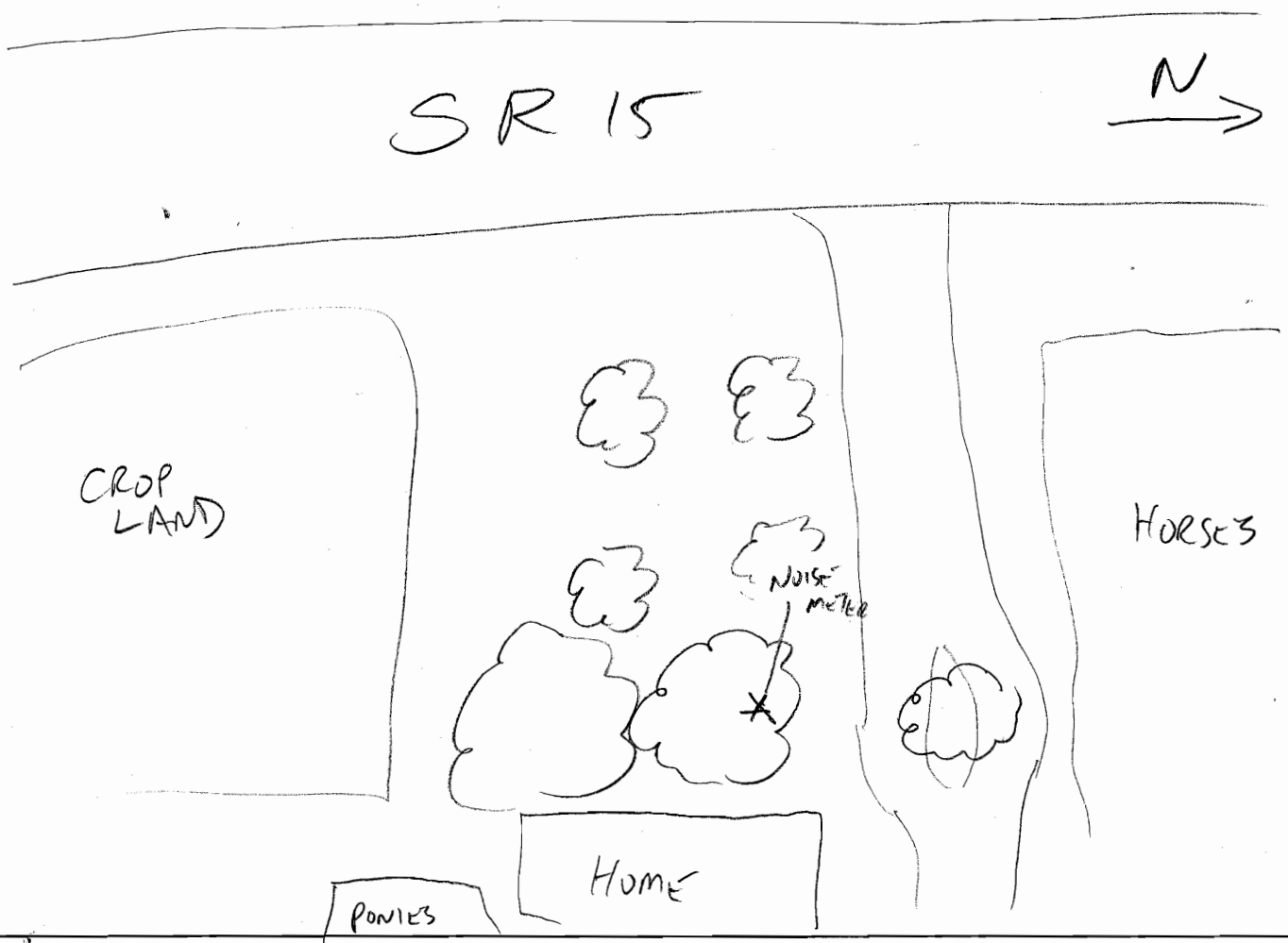
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

PICS 65-69

# Third Rock Noise Monitoring Data Sheet

Project #: M11-001 Proj. Desc: SR15
Site #: 7 Desc: Value Inn
Analyst: S. EVANS, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/11 | 0658 | 14/59 | 45 | 5-7 | 50% | 113.9 | 62.9 | 49.3 | 81.8 |

Background Noise:

| Roadway Name | | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|---|
| | | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US 72 | W← | 36 | ∴ 3 | ⊠∴ 13 | 0 | 0 | 45 | 40-50 |
| | E→ | 23 | . 1 | ⊠∴ 13 | 0 | 0 | 45→55 | 40-50 |
| Access Rd | W← | ⊠ . 11 | 0 | 0 | 0 | 0 | 25 | 25 |
| | E→ | ⊠∴ 6 | 0 | 6 | 0 | 0 | 25 | 25 |
| SR 15 | S↓ | 33 | . 1 | . 1 | 0 | 0 | 35 | 20-30 |
| | N↑ | 24 | ∴ 3 | ⊠ 9 | 0 | 0 | 35 | 20-30 |
| | | | | | | | | |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/20/2011 | 652 | 15/00 | 41 | 5-10 | Overcast | 114.0 | 58.9 | 48.7 | 69.2 |

Background Noise:

| Roadway Name | | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|---|
| | | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US 72 | W← | 38 | . 1 | ⊓ 7 | 0 | 0 | 45 | 40-50 |
| | E→ | 21 | 0 | ⊠ 10 | 0 | ∴ 4 | 45→55 | 40-50 |
| Access Rd | W← | ⊓ 7 | . 1 | 0 | 0 | 0 | 25 | 25 |
| | E→ | L∴ 6 | 0 | 0 | 0 | 0 | 25 | 25 |
| SR 15 | S↓ | ⊠⊠∴ 26 | 0 | ∴ 3 | 0 | 0 | 35 | 20-30 |
| | N↑ | ⊠⊠∴ 25 | . 1 | ⊓ 8 | 0 | 0 | 35 | 20-30 |
| | | | | | | | | |
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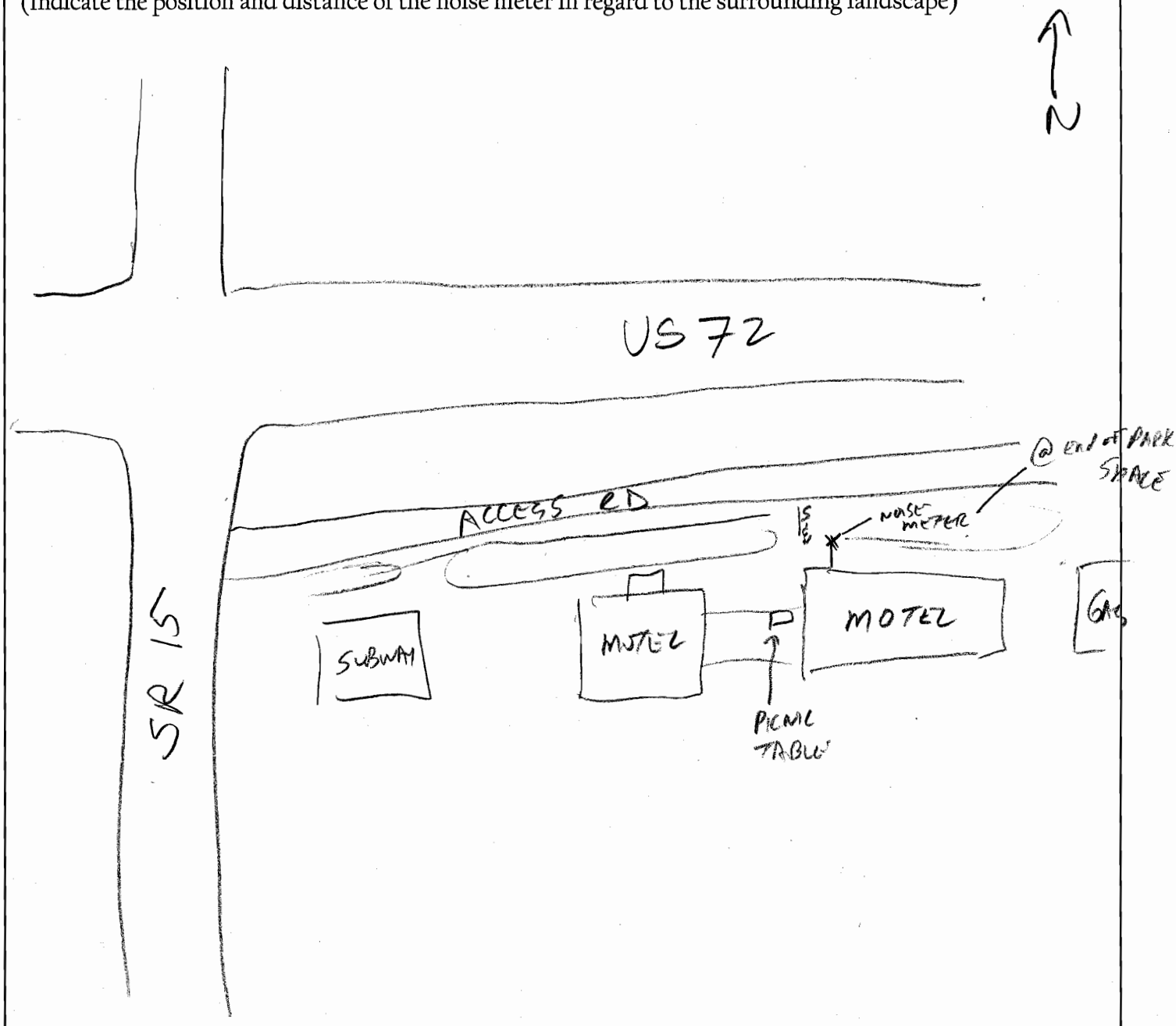
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

DECLINE PAST SUBWAY SHIELDS MOST OF SR 15

# Third Rock Noise Monitoring Data Sheet PICS 70-73

Project #: MS11-001 Proj. Desc: SR15
Site #: 8 Desc: 161 McCoy Str
Analyst: S. EVANS, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/2011 | 723 | 15/00 | 45 | 5-7 | 25% | 113.9 | 62.7 | 45.2 | 79.3 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US 72 ←W | 51 | 1 : 5 | 1 : 5 | 0 | 0 | 55→65 | 55-60 |
| →E | 66 | 7 | 7 | 1 | 0 | 55 | 50-55 |
| McCoy Str ↑N | 0 | 0 | 0 | 0 | 0 | 25 | 25 |
| ↓S | 1 | 0 | 0 | 0 | 0 | 25 | 25 |
| | | | | | | | |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/20/2011 | 712 | 15/00 | 41 | 2-5 | 30% | 114.0 | 63.8 | 45.0 | 79.9 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US 72 ←W | 42 | 1 | 11 | 0 | 0 | 55→65 | 55-60 |
| →E | 34 | 3 | 18 | 3 | 0 | 55 | 50-55 |
| McCoy Str. ↑N | 0 | 0 | 0 | 0 | 0 | 25 | 25 |
| ↓S | 1 | 0 | 0 | 1 | 0 | 25 | 25 |
| | | | | | | | |
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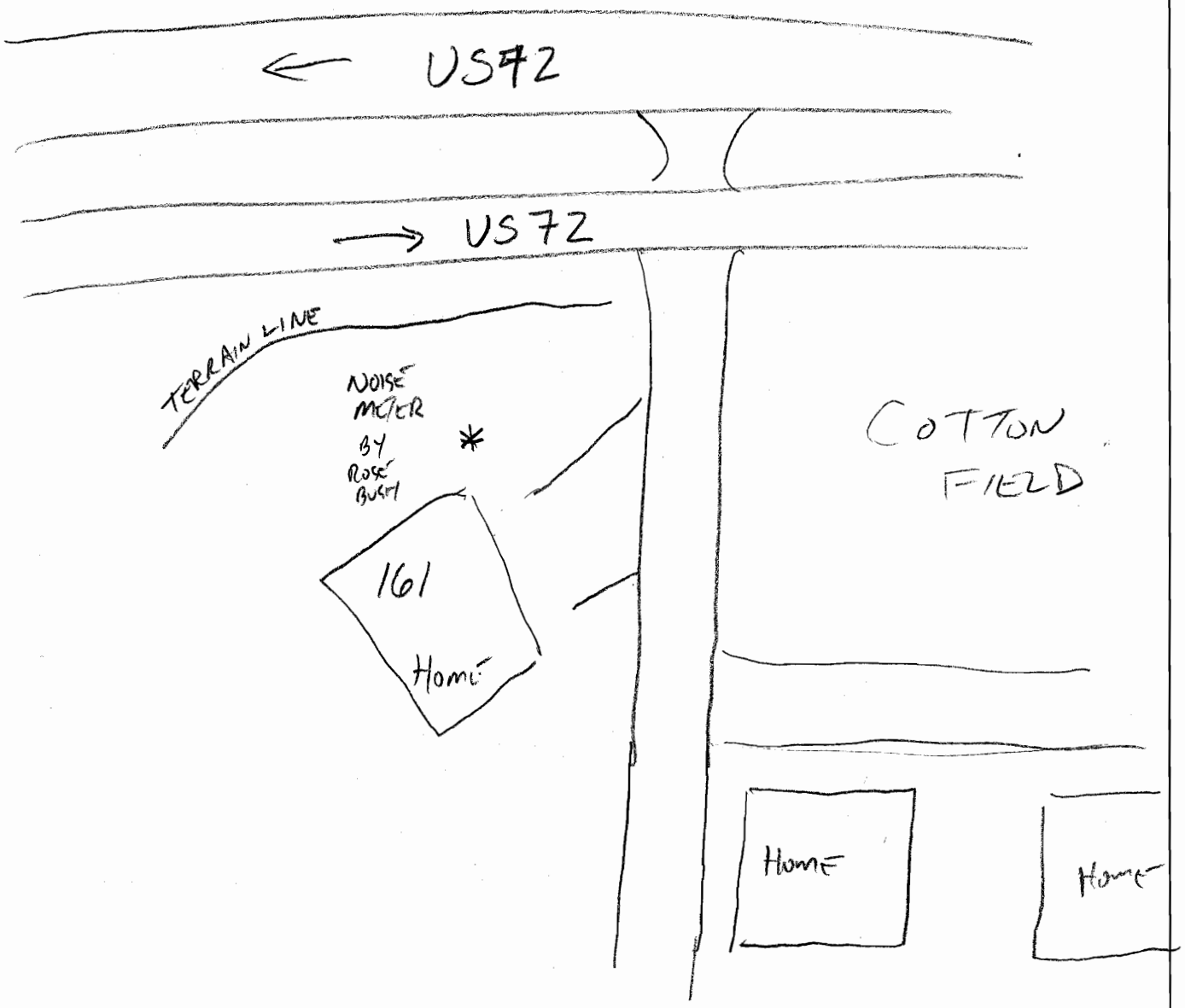
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

ELEVATES OVER RECEPTOR ~ 5'

# Third Rock Noise Monitoring Data Sheet

Pics 74-77

Project #: M511-001 Proj. Desc: SR15
Site #: 9 Desc: Western Terminus US 72
Analyst: S. Evans, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/11 | 742 | 15/00 | 45 | 5-7 | NONE | 113.9 | 61.8 | 40.2 | 77.9 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US 72 ← E | 39 | : 2 | ☒ : 12 | 0 | 0 | 65 | 70-75 |
| → W | 57 | . 1 | ☒ L: 16 | 0 | 0 | 65 | 70-75 |
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## ~~PM~~ AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/20/11 | 731 | 15/00 | 41 | 2-5 | NONE | 114.0 | 63.3 | 42.9 | 80.0 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US 72 ← E | 62 | : : 4 | ☒ 9 | 0 | 0 | 65 | 70-75 |
| → W | 51 | : . 3 | ☒ 18 | 0 | 0 | 65 | 70-75 |
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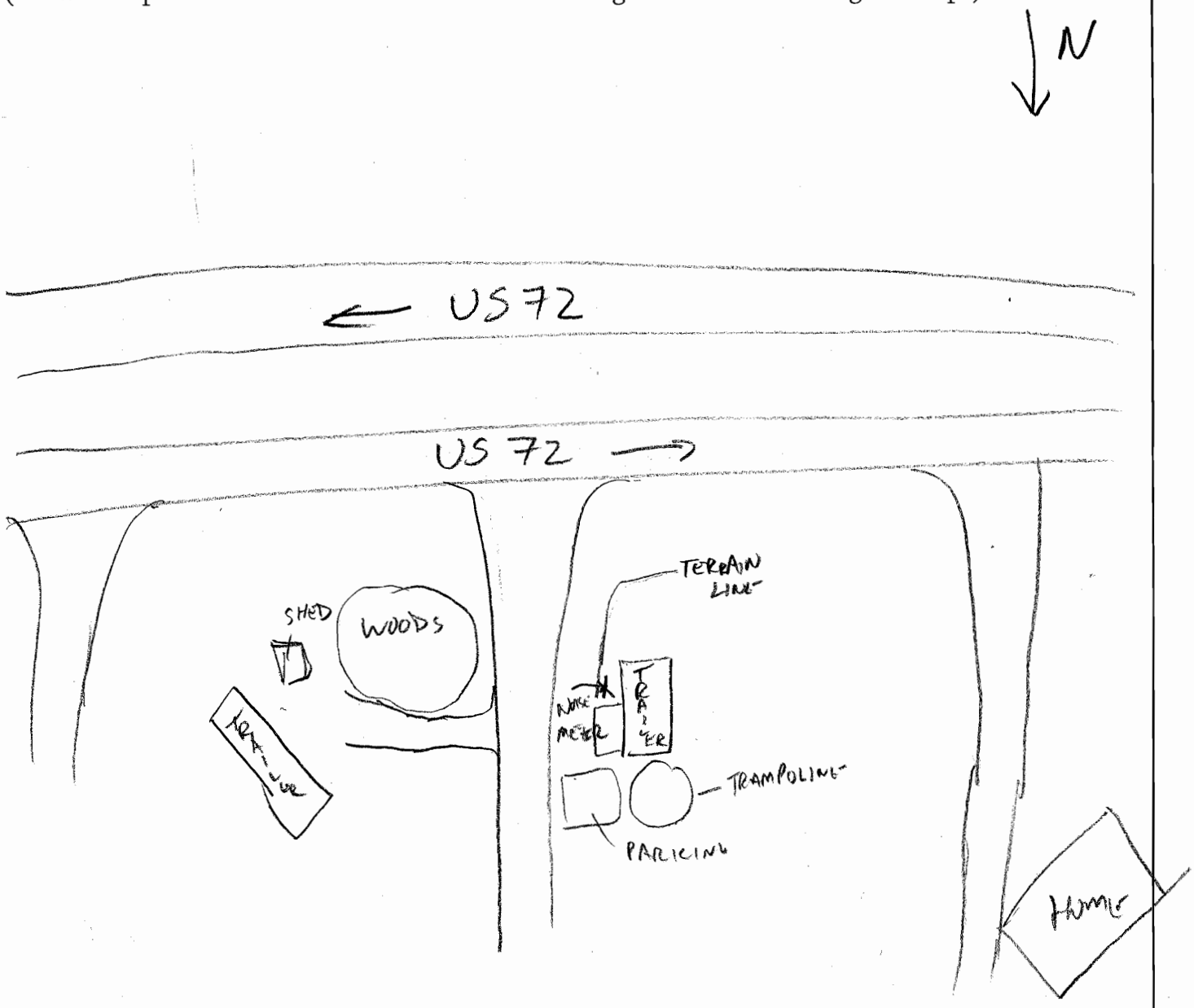
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

PICS 57-60

# Third Rock Noise Monitoring Data Sheet

Project #: MS11-001 Proj. Desc: SR15
Site #: 10 Desc: 321 CR 116
Analyst: S. Evans, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

~~AM~~ AMBIENT NOISE

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/2011 | 9 22 | 15 00 | 46 | 5-12 | Overcast | 113.9 | 47.3 | 36.4 | 69.6 |

Background Noise: LOUD MUSIC INDOORS, RUSTLE OF LEAVES, CAT MEOW

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| | | | | | | | |
| | | | | | | | |
| | NONE | | | | | | |
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PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| / / | | | | | | | | | |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| | | | | | | | |
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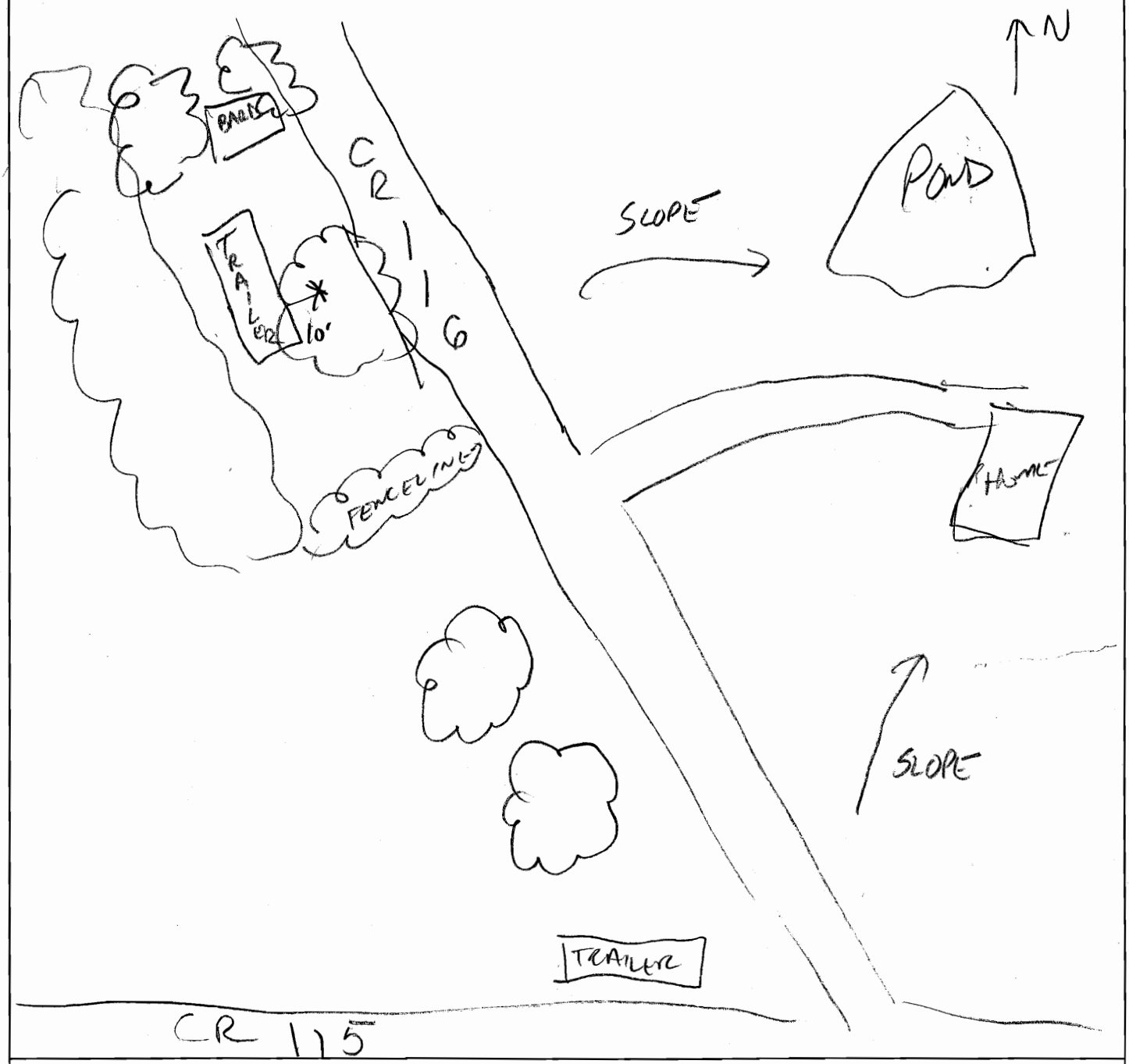
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

SLOPE TOWARDS POND

~ 5' drop from CR 116 to receiver location

# Third Rock Noise Monitoring Data Sheet

PICS 53-56

Project #: M511-001 Proj. Desc: SR 15

Site #: 11 Desc: 3601 CR306

Analyst: S. Evans, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other:

## AM AMBIENT READING

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/2011 | 857 | 16/00 | 46 | 5-13 | Hazy | 113.9 | 45.9 | 36.1 | 60.0 |

Background Noise: WINDY - LEAVES RUSTLING, MAN TALKING LOUDLY

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| CR 306 ← E | 1 | | | | | | |
| → W | 0 | | | | | | |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| / / | | | | | | | | | |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| | | | | | | | |
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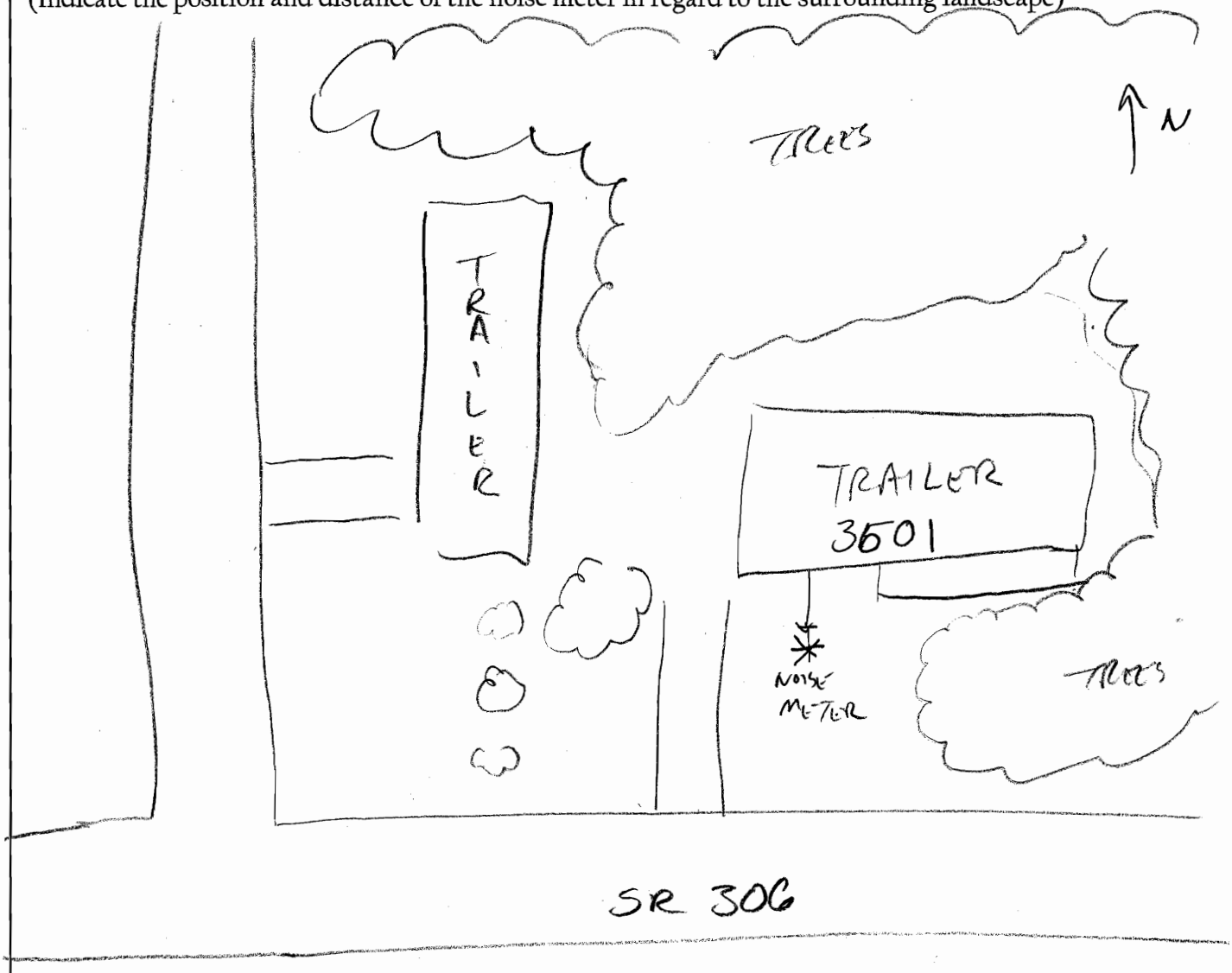
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

# Third Rock Noise Monitoring Data Sheet Pics 78-81

Project #: MS11-001 Proj. Desc: SR15
Site #: 12 Desc: 25980 SR15
Analyst: S. Evans, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121

Other:

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/2011 | 8 13 | 15/49 | 45 | 5-10 | 25 | 113.9 | 61.3 | 38.9 | 77.7 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 ←S | 23 | . 1 | 6 | 0 | . 1 | 55 | 60-65 |
| →N | 26 | . 1 | 4 | . 1 | 0 | 55 | 60-65 |
| | | | | | | | |
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~~PM~~ AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/20/2011 | 8 11 | 15/00 | 42 | 2-5 | none | 114.0 | 61.4 | 42.6 | 75.4 |

Background Noise: Geese honking (~25) @~14:00

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| SR 15 ←S | 16 | 3 | 5 | 0 | 0 | 55 | 60-65 |
| →N | 21 | . 1 | 1; 15 | . 1 | 0 | 55 | 60-65 |
| | | | | | | | |
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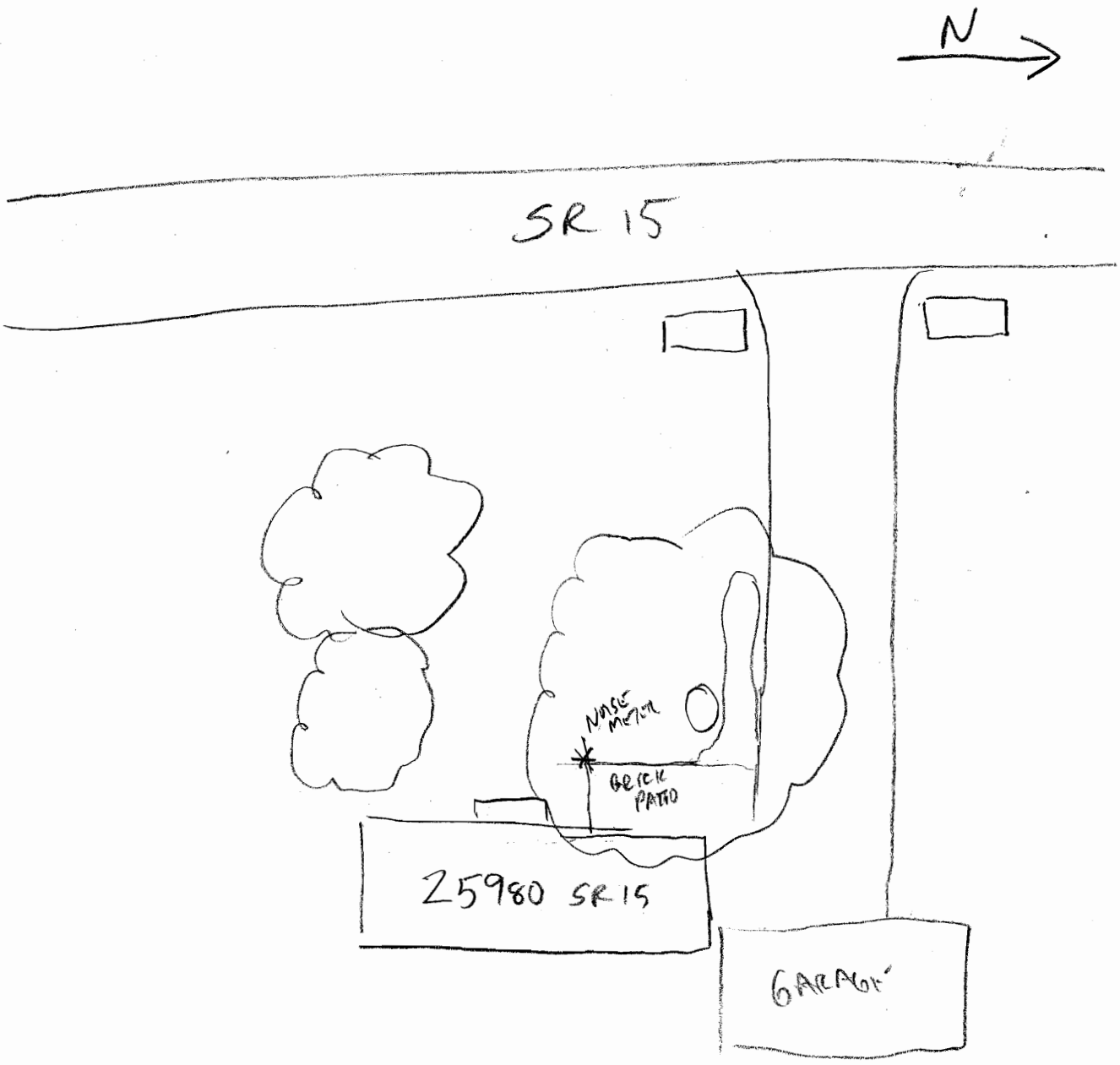
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

VISUAL
SOME SHIELDING FROM TREES TO SOUTH

PKS 49-52

# Third Rock Noise Monitoring Data Sheet

Project #: MS11-001 Proj. Desc: SR15
Site #: 13 Desc: Home on CR302
Analyst: S.EVANS, J. WEBER

Field Equipment:
- [x] Meter: LD 812 S?N 0750
- [x] Micro: LD 377A60 S/N101572
- [x] Preamp: LD PRM828 S/N 2523
- [x] Cal: LD CAL200 S/N 5121

Other:

## AM AMBIENT READING

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/2011 | 836 | 15/00 | 45 | 5-12 | Hazy | 113.9 | 45.2 | 37.1 | 60.9 |

Background Noise: RUSTLE OF LEAVES, DISTANT HIGHWAY NOISE

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| CR 302 ← E | 0 | | | | | | |
| W → | 0 | | | | | | |
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## PM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| / / | | | | | | | | | |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| | | | | | | | |
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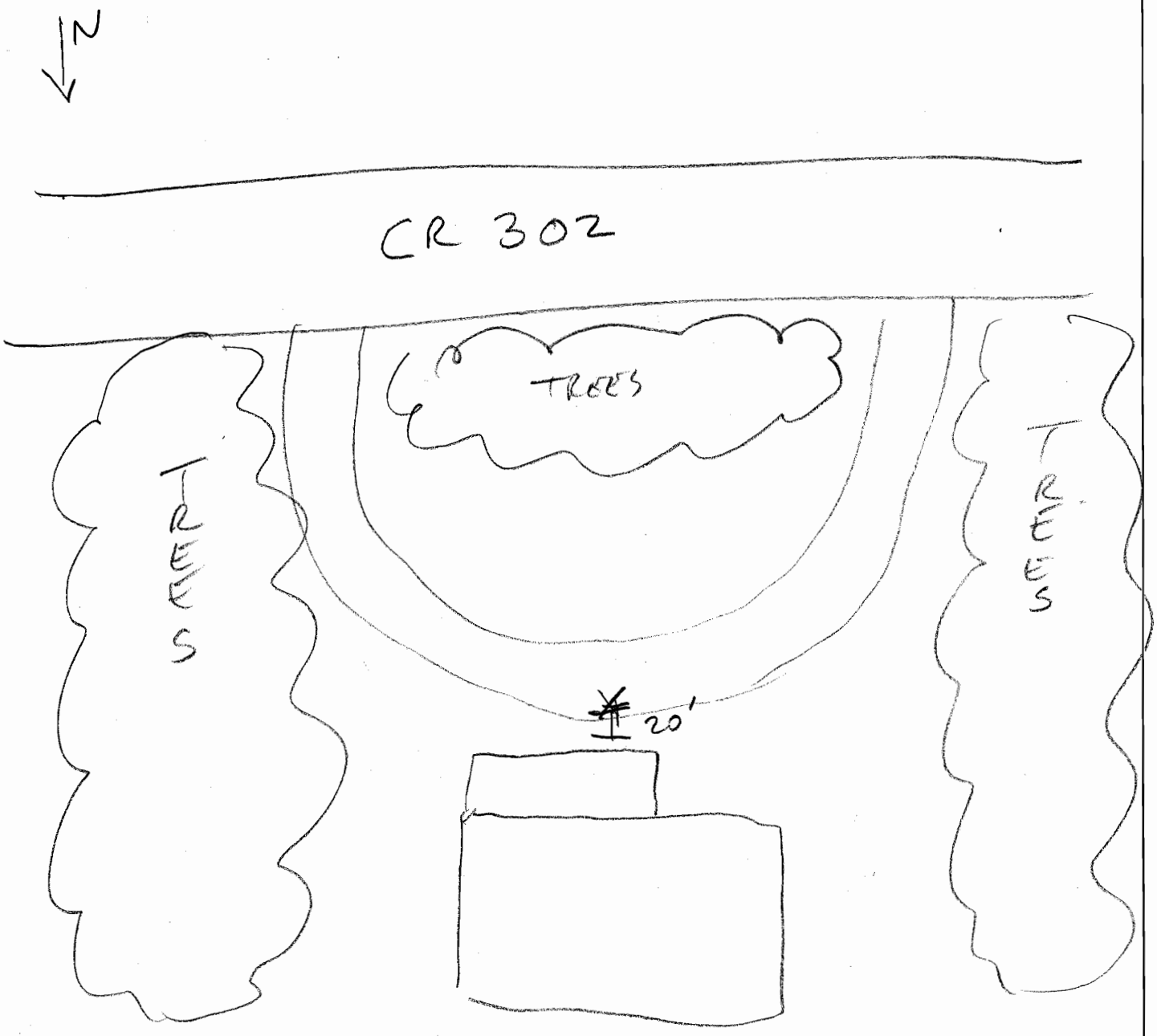
# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

PICS 61-64

# Third Rock Noise Monitoring Data Sheet

Project #: MSII-001 Proj. Desc: SR 15
Site #: 14 Desc: First United Pentecostal Church "Abundant Life Tabernacle"
Analyst: S. EVANS, J. Weber

Field Equipment:
- ☑ Meter: LD 812 S?N 0750
- ☑ Micro: LD 377A60 S/N101572
- ☑ Preamp: LD PRM828 S/N 2523
- ☑ Cal: LD CAL200 S/N 5121
- Other: _____

## AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/19/11 | 637 | 15/01 | 46 | 5-7 | CLOUDY | 113.9 | 52.5 | 39.8 | 84.4 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US72 ← E | 34 | 0 | 8 | 0 | 0 | 65 | 70-75 |
| → W | 56 | 4 | 9 | 0 | 0 | 65 | 70-75 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## ~~PM~~ AM

| Site Conditions | | | | | | Measurments (dBA) | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Start Time | Duration (min/sec) | Temp (°F) | Wind Spd | Cloud Cover | Calibration | $L_{eq}$ | $L_{min}$ | $L_{max}$ |
| 10/20/11 | 633 | 15/00 | 41 | 5-10 | Overcast | 114.0 | 53.8 | 41.9 | 72.3 |

Background Noise:

| Roadway Name | Traffic Counts (By Direction) | | | | | Speed (mph) | |
|---|---|---|---|---|---|---|---|
| | Autos | M Trk | H. Trk | Buses | Mtrcycle | Posted | Observed |
| US72 ← E | 34 | 0 | 11 | 0 | 1 | 65 | 70-75 |
| → W | 47 | 6 | 10 | 0 | 0 | 65 | 70-75 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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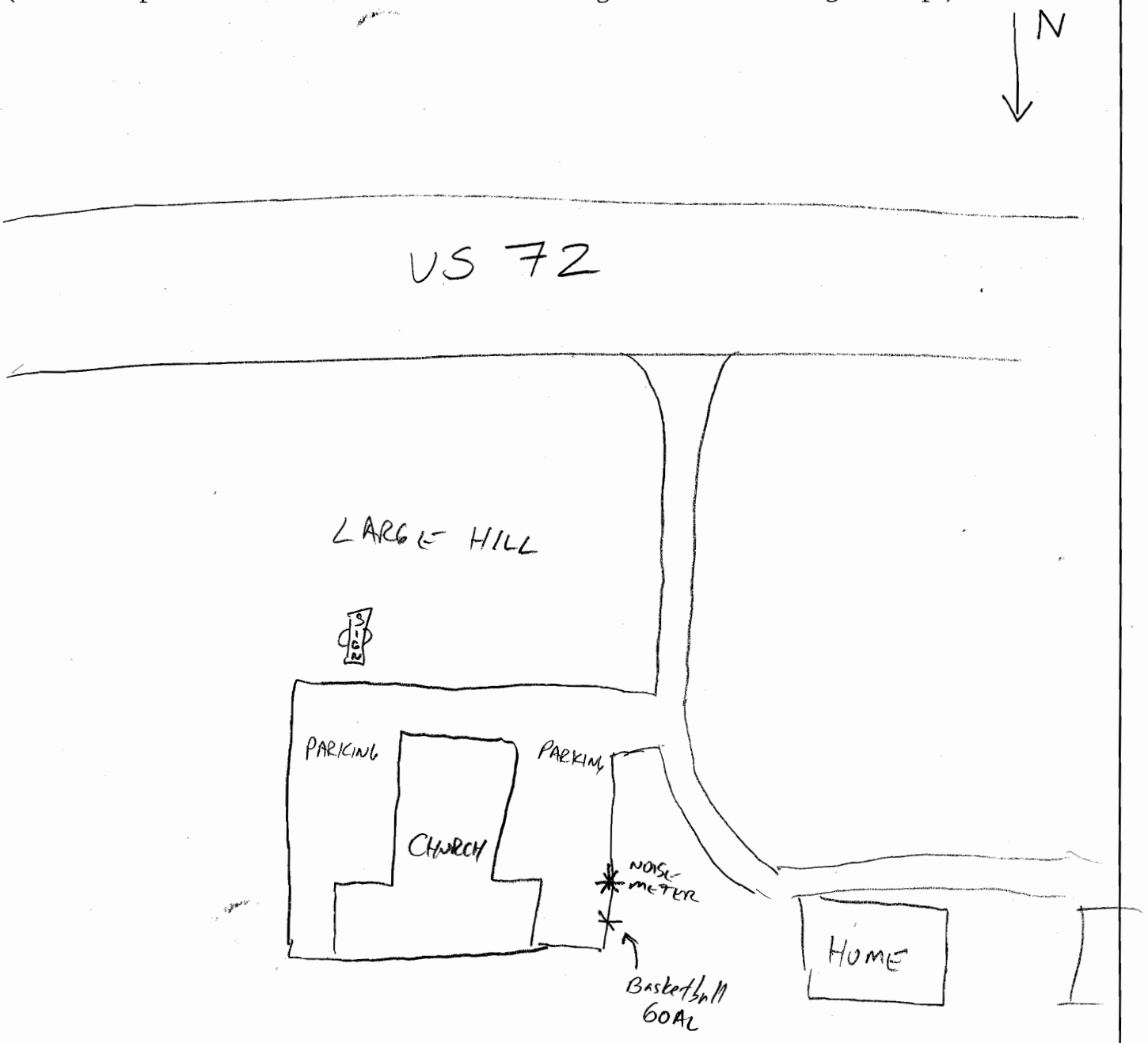
| | | | | | | | |

# Third Rock Noise Monitoring Data Sheet

## Site Map:

(Indicate the position and distance of the noise meter in regard to the surrounding landscape)




## Terrain / Shielding Features:

(Explain features which will need to mapped in TNM like building rows, topo lines, ground zones, etc.)

LARGE HILL SHIELDS RECEPTOR (~30' higher than road)

# APPENDIX C – PHOTO JOURNAL

*Site 1*

*Site 1*

*Site 1*

*Site 1*

*Site 1*

*Site 2*

*Site 2*

*Site 2*

*Site 2*

*Site 3*

*Site 3*

*Site 3*

*Site 4*

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*Site 6*

*Site 6*

*Site 6*

*Site 7*

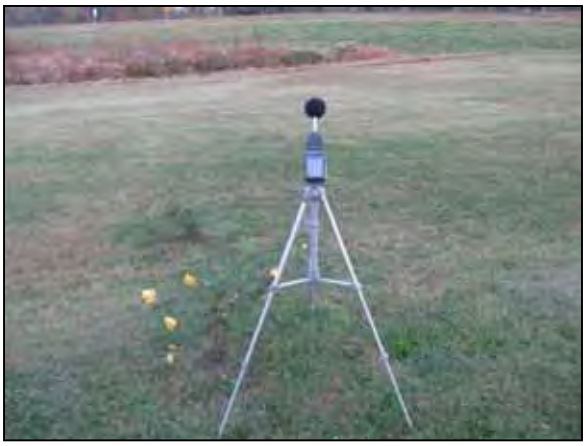
*Site 7*

*Site 7*

*Site 7*

*Site 8*

*Site 8*



*Site 8*

*Site 8*

*Site 9*

*Site 9*

*Site 9*

*Site 9*


*Site 10*

*Site 10*

*Site 10*

*Site 10*

*Site 11*

*Site 11*

*Site 12*

*Site 12*

*Site 12*

*Site 12*

*Site 13*

*Site 13*

*Site 13*

*Site 13*

*Site 14*

*Site 14*

*Site 14*

*Site 14*

# APPENDIX D – TNM RUNS (CD)

# APPENDIX E – TRAFFIC FORECAST

## 2040 Alt A (No-Build) / Alt B (Ex Ali Improvements)
## (trucks percentages are the same as existing)

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SR 15** | | | | | | | | | | | | |
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | U.S. 72 | 53 | 120 | 160 | 47 | 140 | 36 | 59 | 338 | 117 | 106 | 358 | 31 |
| 1615 | Frontage Rd. | 43 | 219 | 32 | 31 | 228 | 16 | 45 | 16 | 47 | 27 | 24 | 23 |
| 1615 | Munn Ave. | 27 | 288 | 3 | 1 | 235 | 7 | 15 | | 49 | 3 | 3 | 24 |
| 1615 | Commerce Ave. | 11 | 215 | 8 | 84 | 181 | 12 | 8 | 15 | 13 | 8 | 19 | 60 |
| 1600 | 400' N. of CR 312 | | 235 | | | 228 | | | | | | | |
| 1600 | 450' N. of CR 302 | | 243 | | | 177 | | | | | | | |
| 1600 | 850' N. of CR 115 | | 232 | | | 219 | | | | | | | |
| 1600 | 250' S. of CR 102 | | 210 | | | 204 | | | | | | | |
| 1600 | 550' S. of TN S.L. | | 194 | | | 203 | | | | | | | |

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **U.S. 72** | | | | | | | | | | | | |
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | Stinson St. | 21 | | 8 | | | | | 557 | 23 | 32 | 477 | |
| 1615 | James St. | 55 | | 12 | | | | | 505 | 35 | 25 | 454 | |
| 1615 | Mill Rd. | 7 | | 37 | | 5 | | 1 | 643 | | 48 | 505 | |
| 1600 | 0.5 mi west of SR 15 | | | | | | | | 657 | | | 577 | |
| 1600 | 0.5 mi east of SR 15 | | | | | | | | 733 | | | 663 | |

**Highway analysis - Directional Peak Hour**

| | Northbound | | | Southbound | | |
|---|---|---|---|---|---|---|
| **SR 15** | | | | | | |
| INTID | TIME | Through | Opposing | TIME | Through | Opposing |
| 400' N. of CR 312 | 1600 | 235 | 228 | 1700 | 262 | 195 |
| 450' N. of CR 302 | 700 | 247 | 144 | 1700 | 262 | 210 |
| 850' N. of CR 115 | 1500 | 267 | 238 | 1400 | 262 | 199 |
| 250' S. of CR 102 | 1500 | 238 | 230 | 1400 | 247 | 177 |
| 550' S. of TN S.L. | 1500 | 210 | 236 | 1400 | 243 | 176 |

**Highway analysis - Overall Peak Hour**

| | Eastbound | | Westbound |
|---|---|---|---|
| **U.S. 72** | | | |
| INTID | TIME | Through | Through |
| 0.5 mi west of SR 15 | 1400 | 673 | 561 |
| 0.5 mi east of SR 15 | 1600 | 733 | 663 |

**AADT**

| | |
|---|---|
| **SR 15** | |
| 400' N. of CR 312 | 5605 |
| 450' N. of CR 302 | 5471 |
| 850' N. of CR 115 | 5605 |
| 250' S. of CR 102 | 5071 |
| 550' S. of TN S.L. | 4938 |
| **U.S. 72** | |
| 0.5 mi west of SR 15 | 16576 |
| 0.5 mi east of SR 15 | 17599 |

## 2040 Alt B (Interchange and Multi-lane Highway volumes - assumes closure of small intersections along US 72 near SR 15 - trucks percentages are the same as existing)

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SR 15** | | | | | | | | | | | | |
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | U.S. 72 | 143 | 120 | 182 | 47 | 140 | 36 | 59 | 523 | 221 | 153 | 448 | 31 |

| | | | |
|---|---|---|---|
| 36 ↙ | 187 ↓ | ↖ 143 | 31 ↙ 153 |
| | | | ↑ 179 |
| 293 ↓ | 47 ↘ | | |
| 59 ↗ 221 ↘ | | ↑ 263 | ↗ 182 |

**Highway analysis - Overall Peak Hour**

| | | Northbound | Southbound |
|---|---|---|---|
| | **SR 15** | | |
| TIME | INTID | Through | Through |
| 1500 | 400' N. of CR 312 | 230 | 251 |
| 1700 | 450' N. of CR 302 | 210 | 262 |
| 1500 | 850' N. of CR 115 | 266 | 238 |
| 1500 | 250' S. of CR 102 | 237 | 230 |
| 1500 | 550' S. of TN S.L. | 210 | 236 |

## 2040 Alt C (Bypass)

### Proposed Bypass Route

**FUTURE SR 15**

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | U.S. 72 | 34 | 77 | 102 | 58 | 174 | 45 | 73 | 437 | 75 | 68 | 406 | 38 |
| | Truck % | 15% | | | 0% | | | 0% | | 2% | 6% | | 8% |
| 1600 | @ old 15 (south) | | 150 | 106 | | 146 | | | | | 103 | | |
| | Truck % | | 11% | 13% | | 11% | | | | | 13% | | |
| 1600 | 400' N. of CR 312 | | 150 | | | 146 | | | | | | | |
| | Truck % | | 11% | | | 11% | | | | | | | |
| 1600 | 450' N. of CR 302 | | 156 | | | 113 | | | | | | | |
| | Truck % | | 9% | | | 10% | | | | | | | |
| 1600 | 850' N. of CR 115 | | 288 | | | 272 | | | | | | | |
| | Truck % | | 8% | | | 9% | | | | | | | |
| 1600 | @ old 15 (north) | | 288 | | 31 | 272 | | | | | | | 32 |
| | Truck % | | 8% | | 7% | 7% | | | | | | | 6% |

Diamond Interchange

| | | | |
|---|---|---|---|
| 45 | 232 | ↖ | 38 |
| ↙ | ↓ | ↙ | 68 |
| | | ↖ | ↑ |
| | | 34 | 150 |
| 241 | 58 | | |
| ↓ | ↘ | | |
| 73 | ↗ | ↑ | ↗ |
| 75 | ↘ | 111 | 102 |

Loop Interchange

| | | | |
|---|---|---|---|
| 45 | 232 | ↖ | 38 |
| ↙ | ↓ | ↙ | 68 |
| | | ↖ | ↑ |
| | | 34 | 150 |
| 241 | 58 | ↖ | 73 |
| ↓ | ↘ | ↙ | 75 |
| | | ↑ | ↗ |
| | | 111 | 102 |

**Highway analysis - Overall Peak Hour**

### Proposed Bypass Route

**SR 15**

| | | Northbound | Southbound |
|---|---|---|---|
| INTID | TIME | Through | Through |
| 400' N. of CR 312 | 1500 | 147 | 161 |
| Truck % | | 10% | 14% |
| 450' N. of CR 302 | 1700 | 134 | 168 |
| Truck % | | 11% | 7% |
| 850' N. of CR 115 | 1500 | 330 | 295 |
| Truck % | | 6% | 13% |
| 250' S. of CR 102 | 1500 | 327 | 317 |
| Truck % | | 9% | 11% |
| 550' S. of TN S.L. | 1500 | 290 | 326 |
| Truck % | | 11% | 12% |

**AADT**

### Proposed Bypass Route

**FUTURE SR 15**

| | |
|---|---|
| 400' N. of CR 312 | 3587 |
| 450' N. of CR 302 | 3501 |
| 850' N. of CR 115 | 6950 |

# 2040 Alt C (Bypass)

## Existing Route

**OLD SR 15**

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | U.S. 72 | 100 | 54 | 92 | 7 | 20 | 5 | 8 | 479 | 111 | 105 | 407 | 4 |
| | Truck % | 15% | 11% | 4% | 0% | 9% | 7% | 0% | 18% | 2% | 6% | 22% | 9% |
| 1615 | Frontage Rd. | 43 | 99 | 32 | 31 | 103 | 16 | 45 | 16 | 47 | 27 | 24 | 23 |
| | Truck % | 0% | 6% | 0% | 0% | 2% | 25% | 9% | 8% | 0% | 0% | 0% | 0% |
| 1615 | Munn Ave. | 27 | 130 | 3 | 1 | 106 | 7 | 15 | | 49 | 3 | 3 | 24 |
| | Truck % | 0% | 7% | 0% | 0% | 10% | 0% | 0% | | 0% | 0% | 0% | 0% |
| 1615 | Commerce Ave. | 11 | 97 | 8 | 84 | 81 | 12 | 8 | 15 | 13 | 8 | 19 | 60 |
| | Truck % | 0% | 5% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 17% | 0% | 0% |
| 1600 | 400' N. of CR 312 | | 106 | | | 103 | | | | | | | |
| | Truck % | | 13% | | | 13% | | | | | | | |
| 1600 | 450' N. of CR 302 | | 109 | | | 80 | | | | | | | |
| | Truck % | | 11% | | | 12% | | | | | | | |
| 1600 | 850' N. of CR 115 | | 32 | | | 31 | | | | | | | |
| | Truck % | | 6% | | | 7% | | | | | | | |
| 1600 | 250' S. of CR 102 | | 290 | | | 282 | | | | | | | |
| | Truck % | | 11% | | | 7% | | | | | | | |
| 1600 | 550' S. of TN S.L. | | 268 | | | 280 | | | | | | | |
| | Truck % | | 10% | | | 9% | | | | | | | |

**U.S. 72**

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | Stinson St. | | | | | | | | | | | | |
| 1615 | James St. | | | | | | | | | | | | |
| 1615 | Mill Rd. | 7 | | 37 | | 5 | | 1 | 643 | | 48 | 505 | |
| | Truck % | 0% | | 7% | | 0% | | 0% | 14% | | 0% | 18% | |
| 1600 | 0.5 mi west of SR 15 | | | | | | | | 657 | | | 577 | |
| 1600 | 0.5 mi east of SR 15 | | | | | | | | 733 | | | 663 | |

**Highway analysis - Directional Peak Hour**

## Existing Route

**SR 15**

| | Northbound | | | Southbound | | |
|---|---|---|---|---|---|---|
| INTID | TIME | Through | Opposing | TIME | Through | Opposing |
| 400' N. of CR 312 | 1600 | 106 | 103 | 1700 | 118 | 88 |
| Truck % | | 12% | 17% | | 17% | 12% |
| 450' N. of CR 302 | 700 | 111 | 65 | 1700 | 118 | 95 |
| Truck % | | 13% | 9% | | 9% | 13% |
| 850' N. of CR 115 | 1500 | 37 | 33 | 1400 | 37 | 28 |
| Truck % | | 5% | 11% | | 11% | 5% |

**Highway analysis - Overall Peak Hour**

**U.S. 72** for scenario B & C HCS+ analysis, see alt A (same inputs)

| | Eastbound | | Westbound |
|---|---|---|---|
| INTID | TIME | Through | Through |
| 0.5 mi west of SR 15 | 1400 | 673 | 561 |
| 0.5 mi east of SR 15 | 1600 | 733 | 663 |

**AADT**

## Existing Route

**OLD SR 15**

| | |
|---|---|
| 400' N. of CR 312 | 2522 |
| 450' N. of CR 302 | 2462 |
| 850' N. of CR 115 | 785 |
| 250' S. of CR 102 | 6998 |
| 550' S. of TN S.L. | 6814 |

**U.S. 72**

| | |
|---|---|
| 0.5 mi west of SR 15 | 16576 |
| 0.5 mi east of SR 15 | 17599 |

SR 15 Growth Calc

Data Year 2011
Design Year 2040
growth rate 1.0%

growth factor 1.33

US 72 Growth Calc

Data Year 2011
Design Year 2040
growth rate 2.5%

growth factor 2.05

## Existing Hourly Volumes (2011)

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **SR 15** | | | | | | | | | | | | |
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | U.S. 72 | 26 | 90 | 78 | 35 | 105 | 27 | 44 | 165 | 57 | 52 | 175 | 23 |
| | Truck % | 15% | 11% | 4% | 0% | 9% | 7% | 0% | 18% | 2% | 6% | 22% | 9% |
| 1615 | Frontage Rd. | 32 | 164 | 24 | 15 | 171 | 8 | 22 | 12 | 35 | 20 | 18 | 11 |
| | Truck % | 0% | 6% | 0% | 0% | 2% | 25% | 9% | 8% | 0% | 0% | 0% | 0% |
| 1615 | Munn Ave. | 20 | 216 | 2 | 1 | 176 | 5 | 11 | | 37 | 2 | 2 | 18 |
| | Truck % | 0% | 7% | 0% | 0% | 10% | 0% | 0% | | 0% | 0% | 0% | 0% |
| 1615 | Commerce Ave. | 8 | 161 | 6 | 63 | 136 | 9 | 6 | 11 | 10 | 6 | 14 | 45 |
| | Truck % | 0% | 5% | 0% | 0% | 3% | 0% | 0% | 0% | 0% | 17% | 0% | 0% |
| 1600 | 400' N. of CR 312 | | 176 | | | 171 | | | | | | | |
| | Truck % | | 11% | | | 11% | | | | | | | |
| 1600 | 450' N. of CR 302 | | 182 | | | 133 | | | | | | | |
| | Truck % | | 9% | | | 10% | | | | | | | |
| 1600 | 850' N. of CR 115 | | 174 | | | 164 | | | | | | | |
| | Truck % | | 9% | | | 10% | | | | | | | |
| 1600 | 250' S. of CR 102 | | 157 | | | 153 | | | | | | | |
| | Truck % | | 11% | | | 8% | | | | | | | |
| 1600 | 550' S. of TN S.L. | | 145 | | | 152 | | | | | | | |
| | Truck % | | 12% | | | 10% | | | | | | | |

| | | Northbound | | | Southbound | | | Eastbound | | | Westbound | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **U.S. 72** | | | | | | | | | | | | |
| TIME | INTID | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right |
| 1615 | Stinson St. | 16 | | 6 | | | | | 272 | 17 | 24 | 233 | |
| | Truck % | 0% | | 0% | | | | | 13% | 0% | 4% | 19% | |
| 1615 | James St. | 41 | | 9 | | | | | 247 | 26 | 19 | 222 | |
| | Truck % | 5% | | 0% | | | | | 14% | 12% | 0% | 20% | |
| 1615 | Mill Rd. | 5 | | 28 | | 4 | | 1 | 314 | | 36 | 247 | |
| | Truck % | 0% | | 7% | | 0% | | 0% | 14% | | 0% | 18% | |
| 1600 | 0.5 mi west of SR 15 | | | | | | | | 321 | | | 282 | |
| | Truck % | | | | | | | | 21% | | | 20% | |
| 1600 | 0.5 mi east of SR 15 | | | | | | | | 358 | | | 324 | |
| | Truck % | | | | | | | | 19% | | | 19% | |

**Highway analysis - Directional Peak Hour**

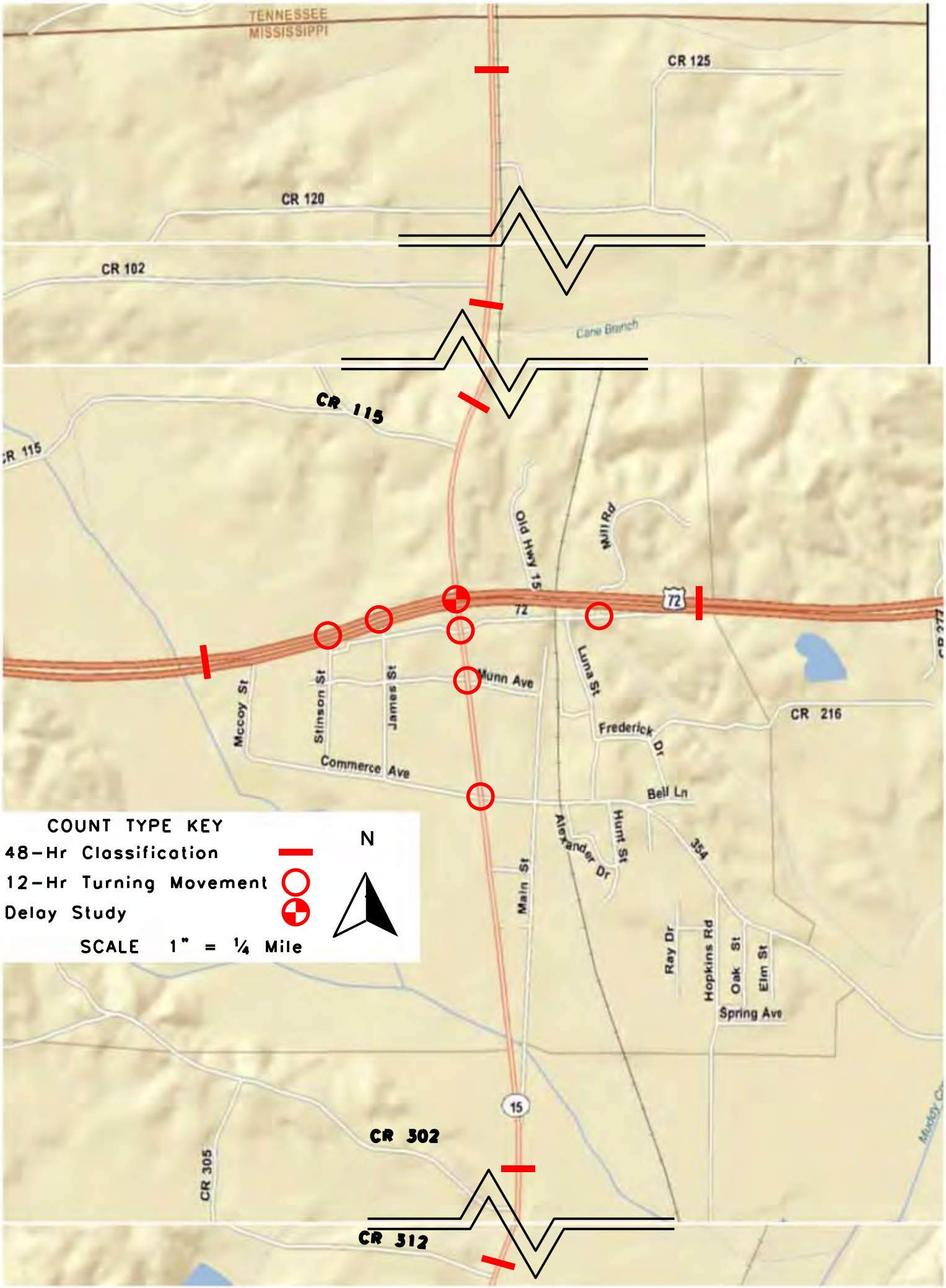
| | | Northbound | | | Southbound | | |
|---|---|---|---|---|---|---|---|
| | **SR 15** | | | | | | |
| | INTID | TIME | Through | Opposing | TIME | Through | Opposing |
| | 400' N. of CR 312 | 1600 | 176 | 171 | 1700 | 196 | 146 |
| | | | 11% | 11% | | 9% | 13% |
| | 450' N. of CR 302 | 700 | 185 | 108 | 1700 | 196 | 157 |
| | | | 13% | 17% | | 7% | 11% |
| | 850' N. of CR 115 | 1500 | 200 | 178 | 1400 | 196 | 149 |
| | | | 7% | 15% | | 14% | 12% |
| | 250' S. of CR 102 | 1500 | 178 | 172 | 1400 | 185 | 133 |
| | | | 10% | 13% | | 16% | 17% |
| | 550' S. of TN S.L. | 1500 | 157 | 177 | 1400 | 182 | 132 |
| | | | 13% | 14% | | 14% | 17% |

**Highway analysis - Overall Peak Hour**

| | | Eastbound | | Westbound |
|---|---|---|---|---|
| | **U.S. 72** | | | |
| | INTID | TIME | Through | Through |
| | 0.5 mi west of SR 15 | 1400 | 329 | 274 |
| | | | 20% | 27% |
| | 0.5 mi east of SR 15 | 1600 | 358 | 324 |
| | | | 19% | 19% |

**AADT**

| | |
|---|---|
| **SR 15** | |
| 400' N. of CR 312 | 4200 |
| 450' N. of CR 302 | 4100 |
| 850' N. of CR 115 | 4200 |
| 250' S. of CR 102 | 3800 |
| 550' S. of TN S.L. | 3700 |
| **U.S. 72** | |
| 0.5 mi west of SR 15 | 8100 |
| 0.5 mi east of SR 15 | 8600 |


TENNESSEE
MISSISSIPPI
CR 125
CR 120
CR 102
Cane Branch
CR 115
CR 115
Old Hwy 15
Mill Rd
72
72
Munn Ave
Luna St
McCoy St
Stinson St
James St
Commerce Ave
Frederick Dr
CR 216
Bell Ln
Alexander Dr
Hunt St
354
Main St
Ray Dr
Hopkins Rd
Oak St
Elm St
Spring Ave
15
CR 302
CR 305
CR 312
COUNT TYPE KEY
48-Hr Classification
12-Hr Turning Movement
Delay Study
SCALE 1" = ¼ Mile
N

# APPENDIX F – TRAFFIC NOISE MODEL PREDICTIONS, IMPACTS AND SET BACK DISTANCES

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| 1 | B | 66 | SR 15 | 66 | 62 | 64 | 65 | In Right-of-Way | | | In Right-of-Way | | |
| 2 | B | 66 | SR 15 | 62 | 67 | 64 | 66 | In Right-of-Way | | | In Right-of-Way | | |
| 3 | B | 66 | SR 15 | 112 | 63 | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| 4 | C | 66 | SR 15 | 185 | 67 | 62 | 63 | 185 | 67 | 5 | 185 | 66 | 4 |
| 5 | B | 66 | SR 15 | 43 | 68 | 62 | 64 | 43 | 66 | 4 | 43 | 66 | 4 |
| 6 | B | 66 | SR 15 | 178 | 63 | 58 | 59 | 178 | 60 | 2 | 178 | 60 | 2 |
| 7 | E | 66 | SR 15 | 460 | 63 | 56 | 59 | 460 | 60 | 4 | 460 | 59 | 3 |
| 8 | B | 66 | US 72 | 232 | 64 | 63 | 66 | 221 | 66 | 3 | 232 | 62 | -1 |
| 9 | B | 66 | US 72 | 138 | 63 | 60 | 63 | 138 | 63 | 3 | 138 | 63 | 3 |
| 10 | B | 66 | CR 116 / SR 15 | 36 / 1287 | 47 | 45 | 45 | 1763 | 45 | 0 | 1763 | 45 | 0 |
| 11 | B | 66 | CR 306 / SR 15 | 103 / 3071 | 46 | 45 | 45 | 3038 | 45 | 0 | 3038 | 45 | 0 |
| 12 | B | 66 | SR 15 | 118 | 61 | 60 | 61 | 118 | 63 | 3 | 118 | 63 | 3 |
| 13 | B | 66 | CR 302 / SR 15 | 90 / 4163 | 45 | 45 | 45 | 4125 | 45 | 0 | 4125 | 45 | 0 |
| 14 | C | 66 | US 72 | 275 | 54 | 57 | 60 | 275 | 60 | 3 | 275 | 60 | 3 |
| B1 | B | 66 | US 72 | 258 | | 56 | 59 | 258 | 60 | 4 | 409 | 58 | 2 |
| B2 | B | 66 | US 72 | 345 | | 54 | 57 | 345 | 58 | 4 | 502 | 57 | 3 |
| B3 | B | 66 | US 72 | 460 | | 52 | 55 | 460 | 56 | 4 | 616 | 55 | 3 |
| B4 | B | 66 | US 72 | 386 | | 53 | 56 | 386 | 57 | 4 | 573 | 56 | 3 |
| B5 | B | 66 | US 72 | 393 | | 53 | 56 | 393 | 57 | 4 | 591 | 56 | 3 |
| B6 | B | 66 | US 72 | 393 | | 53 | 56 | 393 | 57 | 4 | 602 | 56 | 3 |
| B7 | B | 66 | US 72 | 400 | | 53 | 56 | 400 | 57 | 4 | 621 | 56 | 3 |
| B8 | B | 66 | US 72 | 487 | | 51 | 54 | 487 | 55 | 4 | 752 | 55 | 4 |
| B9 | B | 66 | US 72 | 380 | | 56 | 58 | 380 | 59 | 3 | 593 | 58 | 2 |
| B10 | B | 66 | SR 15 | 909 | | 61 | 62 | 873 | 63 | 2 | 873 | 63 | 2 |
| B11 | B | 66 | US 72 | 395 | | 55 | 57 | 395 | 58 | 3 | 593 | 58 | 3 |
| B12 | B | 66 | SR 15 | 800 | | 53 | 55 | 766 | 56 | 3 | 766 | 56 | 3 |
| B13 | B | 66 | SR 15 | 742 | | 53 | 55 | 711 | 55 | 2 | 711 | 56 | 3 |
| B14 | B | 66 | SR 15 | 715 | | 52 | 54 | 616 | 55 | 3 | 616 | 56 | 4 |
| B15 | B | 66 | SR 15 | 644 | | 52 | 54 | 584 | 55 | 3 | 584 | 56 | 4 |
| B16 | B | 66 | SR 15 | 617 | | 52 | 54 | 584 | 55 | 3 | 584 | 56 | 4 |
| B17 | B | 66 | SR 15 | 548 | | 51 | 54 | 520 | 54 | 3 | 520 | 56 | 5 |
| B18 | B | 66 | SR 15 | 510 | | 52 | 54 | 480 | 55 | 3 | 480 | 56 | 4 |
| B19 | B | 66 | SR 15 | 461 | | 52 | 54 | 431 | 55 | 3 | 431 | 56 | 4 |
| B20 | B | 66 | SR 15 | 429 | | 52 | 54 | 399 | 55 | 3 | 399 | 56 | 4 |
| B21 | B | 66 | SR 15 | 832 | | 53 | 55 | 802 | 56 | 3 | 802 | 56 | 3 |
| B22 | B | 66 | SR 15 | 790 | | 53 | 55 | 760 | 56 | 3 | 760 | 56 | 3 |
| B23 | B | 66 | SR 15 | 719 | | 53 | 55 | 687 | 56 | 3 | 687 | 56 | 3 |
| B24 | B | 66 | SR 15 | 683 | | 53 | 55 | 653 | 55 | 2 | 653 | 56 | 3 |
| B25 | B | 66 | SR 15 | 605 | | 53 | 55 | 575 | 56 | 3 | 575 | 56 | 3 |
| B26 | B | 66 | SR 15 | 569 | | 53 | 55 | 539 | 56 | 3 | 539 | 56 | 3 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B27 | B | 66 | SR 15 | 495 | | 53 | 55 | 465 | 56 | 3 | 465 | 56 | 3 |
| B28 | B | 66 | SR 15 | 458 | | 54 | 55 | 428 | 56 | 2 | 428 | 57 | 3 |
| B29 | B | 66 | SR 15 | 341 | | 52 | 54 | 311 | 56 | 4 | 311 | 56 | 4 |
| B30 | B | 66 | SR 15 | 548 | | 48 | 51 | 518 | 52 | 4 | 518 | 54 | 6 |
| B31 | B | 66 | SR 15 | 43 | | 62 | 63 | In Right-of-Way | | | In Right-of-Way | | |
| B32 | B | 66 | SR 15 | 60 | | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B33 | B | 66 | SR 15 | 60 | | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B34 | B | 66 | SR 15 | 60 | | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B35 | B | 66 | SR 15 | 80 | | 59 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B36 | B | 66 | SR 15 | 100 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B37 | B | 66 | SR 15 | 75 | | 59 | 60 | In Right-of-Way | | | In Right-of-Way | | |
| B38 | B | 66 | SR 15 | 434 | | 48 | 50 | 404 | 51 | 3 | 404 | 52 | 4 |
| B39 | B | 66 | SR 15 | 620 | | 48 | 50 | 588 | 51 | 3 | 588 | 52 | 4 |
| B40 | B | 66 | SR 15 | 722 | | 48 | 50 | 692 | 50 | 2 | 692 | 52 | 4 |
| B41 | B | 66 | SR 15 | 54 | | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B42 | B | 66 | SR 15 | 190 | | 55 | 56 | 158 | 57 | 2 | 158 | 57 | 2 |
| B43 | B | 66 | SR 15 | 256 | | 54 | 55 | 222 | 58 | 4 | 222 | 58 | 4 |
| B44 | B | 66 | SR 15 | 456 | | 50 | 51 | 426 | 54 | 4 | 426 | 54 | 4 |
| B45 | B | 66 | SR 15 | 540 | | 49 | 50 | 505 | 52 | 3 | 505 | 52 | 3 |
| B46 | B | 66 | SR 15 | 670 | | 46 | 47 | 635 | 49 | 3 | 635 | 49 | 3 |
| B47 | B | 66 | SR 15 | 707 | | 45 | 46 | 741 | 48 | 3 | 707 | 48 | 3 |
| B48 | B | 66 | SR 15 | 323 | | 52 | 54 | 293 | 57 | 5 | 293 | 57 | 5 |
| B49 | B | 66 | SR 15 | 120 | | 60 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B50 | B | 66 | SR 15 | 746 | | 46 | 47 | 714 | 49 | 3 | 714 | 49 | 3 |
| B51 | B | 66 | SR 15 | 124 | | 59 | 60 | In Right-of-Way | | | In Right-of-Way | | |
| B52 | B | 66 | SR 15 | 986 | | 45 | 45 | 860 | 46 | 1 | 860 | 46 | 1 |
| B53 | B | 66 | SR 15 | 720 | | 45 | 46 | 595 | 49 | 4 | 595 | 49 | 4 |
| B54 | B | 66 | SR 15 | 554 | | 48 | 49 | 425 | 52 | 4 | 425 | 52 | 4 |
| B55 | B | 66 | SR 15 | 110 | | 61 | 63 | In Right-of-Way | | | In Right-of-Way | | |
| B56 | B | 66 | SR 15 | 428 | | 49 | 50 | 428 | 52 | 3 | 428 | 52 | 3 |
| B57 | B | 66 | SR 15 | 833 | | 45 | 45 | 833 | 45 | 0 | 833 | 45 | 0 |
| B58 | B | 66 | SR 15 | 334 | | 52 | 53 | 334 | 54 | 2 | 334 | 54 | 2 |
| B59 | B | 66 | SR 15 | 480 | | 49 | 50 | 480 | 51 | 2 | 480 | 51 | 2 |
| B60 | B | 66 | SR 15 | 356 | | 52 | 53 | 356 | 54 | 2 | 356 | 54 | 2 |
| B61 | B | 66 | SR 15 | 306 | | 53 | 54 | 306 | 56 | 3 | 306 | 56 | 3 |
| B66 | B | 66 | SR 15 | 295 | | 52 | 54 | 295 | 55 | 3 | 295 | 55 | 3 |
| B67 | B | 66 | SR 15 | 231 | | 55 | 57 | 237 | 58 | 3 | 237 | 58 | 3 |
| B68 | B | 66 | SR 15 | 143 | | 60 | 61 | 143 | 62 | 2 | 143 | 62 | 2 |
| B69 | B | 66 | SR 15 | 114 | | 62 | 63 | 114 | 63 | 1 | 114 | 63 | 1 |
| B70 | B | 66 | SR 15 | 417 | | 46 | 48 | 417 | 50 | 4 | 417 | 50 | 4 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B71 | B | 66 | SR 15 | 456 | | 45 | 47 | 456 | 50 | 5 | 456 | 50 | 5 |
| B72 | B | 66 | SR 15 | 451 | | 45 | 47 | 451 | 50 | 5 | 451 | 50 | 5 |
| B73 | B | 66 | SR 15 | 484 | | 46 | 47 | 484 | 50 | 4 | 484 | 50 | 4 |
| B74 | B | 66 | SR 15 | 493 | | 45 | 47 | 493 | 50 | 5 | 493 | 50 | 5 |
| B75 | B | 66 | SR 15 | 493 | | 45 | 47 | 493 | 50 | 5 | 493 | 50 | 5 |
| B76 | B | 66 | SR 15 | 520 | | 45 | 46 | 520 | 50 | 5 | 520 | 50 | 5 |
| B77 | B | 66 | SR 15 | 60 | | 61 | 63 | 60 | 63 | 2 | 60 | 63 | 2 |
| B78 | B | 66 | SR 15 | 546 | | 45 | 47 | 546 | 50 | 5 | 546 | 50 | 5 |
| B79 | B | 66 | SR 15 | 493 | | 49 | 51 | 493 | 52 | 3 | 493 | 53 | 4 |
| B80 | B | 66 | SR 15 | 272 | | 53 | 54 | 272 | 57 | 4 | 272 | 57 | 4 |
| B81 | B | 66 | SR 15 | 79 | | 60 | 61 | 79 | 63 | 3 | 79 | 64 | 4 |
| B82 | B | 66 | SR 15 | 536 | | 46 | 48 | 536 | 51 | 5 | 536 | 52 | 6 |
| B83 | B | 66 | SR 15 | 717 | | 46 | 48 | 717 | 49 | 3 | 717 | 50 | 4 |
| B84 | B | 66 | SR 15 | 512 | | 47 | 49 | 512 | 51 | 4 | 512 | 52 | 5 |
| B85 | B | 66 | SR 15 | 101 | | 58 | 60 | 101 | 62 | 4 | 101 | 62 | 4 |
| B86 | B | 66 | SR 15 | 106 | | 58 | 59 | 106 | 62 | 4 | 106 | 62 | 4 |
| B87 | B | 66 | SR 15 | 517 | | 47 | 49 | 517 | 51 | 4 | 517 | 52 | 5 |
| B88 | B | 66 | SR 15 | 715 | | 46 | 48 | 715 | 49 | 3 | 715 | 50 | 4 |
| B89 | B | 66 | SR 15 | 730 | | 46 | 48 | 730 | 49 | 3 | 730 | 50 | 4 |
| B90 | B | 66 | SR 15 | 746 | | 45 | 47 | 746 | 49 | 4 | 746 | 50 | 5 |
| B91 | B | 66 | SR 15 | 541 | | 47 | 49 | 541 | 51 | 4 | 541 | 52 | 5 |
| B92 | B | 66 | US 72 | 215 | | 59 | 62 | 215 | 62 | 3 | 215 | 62 | 3 |
| B93 | B | 66 | SR 15 | 46 | | 62 | 63 | 46 | 66 | 4 | 46 | 66 | 4 |
| B94 | B | 66 | SR 15 | 55 | | 61 | 63 | 55 | 65 | 4 | 55 | 65 | 4 |
| B95 | B | 66 | SR 15 | 61 | | 61 | 62 | 61 | 65 | 4 | 61 | 65 | 4 |
| B96 | B | 66 | SR 15 | 344 | | 51 | 53 | 344 | 56 | 5 | 344 | 56 | 5 |
| B97 | B | 66 | SR 15 | 250 | | 52 | 54 | 250 | 57 | 5 | 250 | 57 | 5 |
| B98 | B | 66 | SR 15 | 655 | | 48 | 50 | 655 | 52 | 4 | 655 | 54 | 6 |
| B99 | B | 66 | SR 15 | 690 | | 49 | 51 | 690 | 53 | 4 | 690 | 54 | 5 |
| B100 | B | 66 | SR 15 | 694 | | 49 | 52 | 694 | 53 | 4 | 694 | 55 | 6 |
| B101 | B | 66 | SR 15 | 705 | | 51 | 53 | 705 | 55 | 4 | 705 | 57 | 6 |
| B102 | B | 66 | SR 15 | 233 | | 52 | 54 | 233 | 57 | 5 | 233 | 58 | 6 |
| B103 | B | 66 | SR 15 | 244 | | 52 | 54 | 244 | 57 | 5 | 244 | 58 | 6 |
| B104 | B | 66 | SR 15 | 247 | | 52 | 54 | 247 | 57 | 5 | 247 | 58 | 6 |
| B105 | B | 66 | US 72 | 337 | | 57 | 60 | 337 | 61 | 4 | 337 | 61 | 4 |
| B106 | B | 66 | US 72 | 162 | | 61 | 65 | 162 | 65 | 4 | 162 | 65 | 4 |
| B107 | B | 66 | US 72 | 318 | | 56 | 59 | 318 | 59 | 3 | 318 | 60 | 4 |
| B108 | B | 66 | US 72 | 427 | | 54 | 57 | 427 | 57 | 3 | 427 | 57 | 3 |
| B109 | B | 66 | US 72 | 633 | | 50 | 54 | 633 | 54 | 4 | 633 | 54 | 4 |
| B110 | B | 66 | US 72 | 725 | | 49 | 52 | 725 | 52 | 3 | 725 | 52 | 3 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B111 | B | 66 | US 72 | 706 | | 49 | 52 | 706 | 52 | 3 | 706 | 52 | 3 |
| B112 | B | 66 | US 72 | 873 | | 47 | 51 | 873 | 51 | 4 | 873 | 51 | 4 |
| B113 | B | 66 | US 72 | 273 | | 60 | 63 | 273 | 63 | 3 | 273 | 63 | 3 |
| B114 | B | 66 | US 72 | 142 | | 62 | 65 | 142 | 65 | 3 | In Right-of-Way | | |
| B115 | B | 66 | US 72 | 330 | | 55 | 58 | 330 | 58 | 3 | 330 | 58 | 3 |
| B116 | B | 66 | US 72 | 381 | | 54 | 57 | 381 | 57 | 3 | 381 | 57 | 3 |
| B117 | B | 66 | US 72 | 149 | | 62 | 65 | 149 | 67 | 5 | In Right-of-Way | | |
| B118 | B | 66 | SR 15 | 128 | | 58 | 60 | 128 | 63 | 5 | In Right-of-Way | | |
| B119 | B | 66 | SR 15 | 119 | | 59 | 60 | 119 | 63 | 4 | 119 | 64 | 5 |
| B120 | B | 66 | SR 15 | 77 | | 62 | 63 | 77 | 66 | 4 | 77 | 66 | 4 |
| B121 | B | 66 | SR 15 | 69 | | 62 | 64 | 69 | 67 | 5 | 69 | 66 | 4 |
| B122 | B | 66 | SR 15 | 60 | | 63 | 64 | 60 | 67 | 4 | 60 | 67 | 4 |
| B123 | B | 66 | SR 15 | 75 | | 62 | 63 | 75 | 66 | 4 | 75 | 66 | 4 |
| B124 | B | 66 | SR 15 | 125 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B125 | B | 66 | CR 115 / SR 15 | 58 / 2425 | | 47 | 47 | 2391 | 47 | 0 | 2391 | 48 | 1 |
| B126 | B | 66 | CR 115 / SR 15 | 50 / 2112 | | 47 | 48 | 2079 | 47 | 0 | 2079 | 48 | 1 |
| B127 | B | 66 | CR 115 / SR 15 | 37 / 168 | | 50 | 50 | 1998 | 50 | 0 | 1998 | 51 | 1 |
| B128 | B | 66 | CR 115 / SR 15 | 90 / 1845 | | 45 | 46 | 1820 | 46 | 1 | 1820 | 47 | 2 |
| B129 | B | 66 | CR 115 / SR 15 | 137 / 1775 | | 45 | 45 | 1747 | 45 | 0 | 1747 | 45 | 0 |
| B130 | B | 66 | CR 115 / SR 15 | 13 / 1504 | | 51 | 52 | 1477 | 52 | 1 | 1477 | 52 | 1 |
| B131 | B | 66 | CR 116 / SR 15 | 57 / 2086 | | 45 | 45 | 2052 | 45 | 0 | 2052 | 45 | 0 |
| B132 | B | 66 | CR 116 / SR 15 | 440 / 1600 | | 45 | 45 | 1570 | 45 | 0 | 1570 | 45 | 0 |
| B133 | B | 66 | CR 116 / SR 15 | 244 / 1287 | | 45 | 45 | 1259 | 45 | 0 | 1259 | 45 | 0 |
| B134 | B | 66 | CR 115 / SR 15 | 34 / 1135 | | 51 | 52 | 1105 | 52 | 1 | 1105 | 52 | 1 |
| B135 | B | 66 | SR 15 | 286 | | 52 | 54 | 286 | 56 | 4 | 286 | 56 | 4 |
| B136 | B | 66 | SR 15 | 202 | | 55 | 57 | 202 | 58 | 3 | 202 | 58 | 3 |
| B137 | B | 66 | SR 15 | 584 | | 46 | 48 | 537 | 48 | 2 | 537 | 48 | 2 |
| B138 | B | 66 | SR 15 | 212 | | 54 | 55 | In Right-of-Way | | | In Right-of-Way | | |
| B139 | B | 66 | SR 15 | 173 | | 55 | 57 | In Right-of-Way | | | In Right-of-Way | | |
| B140 | B | 66 | SR 15 | 310 | | 52 | 53 | 310 | 53 | 1 | 310 | 53 | 1 |
| B141 | B | 66 | SR 15 | 520 | | 47 | 48 | 395 | 52 | 5 | 395 | 52 | 5 |
| B142 | B | 66 | SR 15 | 194 | | 56 | 57 | In Right-of-Way | | | In Right-of-Way | | |
| B143 | B | 66 | SR 15 | 69 | | 64 | 66 | In Right-of-Way | | | In Right-of-Way | | |
| B144 | B | 66 | SR 15 | 634 | | 45 | 47 | 634 | 48 | 3 | 634 | 48 | 3 |
| B145 | B | 66 | SR 15 | 176 | | 57 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B146 | B | 66 | SR 15 | 122 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B147 | B | 66 | SR 15 | 131 | | 59 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B148 | B | 66 | SR 15 | 131 | | 59 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B149 | B | 66 | SR 15 | 109 | | 61 | 63 | In Right-of-Way | | | In Right-of-Way | | |
| B150 | B | 66 | SR 15 | 148 | | 59 | 60 | In Right-of-Way | | | In Right-of-Way | | |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B151 | B | 66 | SR 15 | 123 | | 60 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B152 | B | 66 | SR 15 | 329 | | 51 | 53 | 329 | 53 | 2 | 329 | 53 | 2 |
| B153 | B | 66 | SR 15 | 151 | | 58 | 60 | In Right-of-Way | | | In Right-of-Way | | |
| B154 | B | 66 | SR 15 | 670 | | 45 | 47 | 670 | 47 | 2 | 670 | 47 | 2 |
| B155 | B | 66 | SR 15 | 163 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B156 | B | 66 | SR 15 | 269 | | 53 | 55 | In Right-of-Way | | | In Right-of-Way | | |
| B157 | B | 66 | SR 15 | 162 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B158 | B | 66 | SR 15 | 297 | | 61 | 63 | In Right-of-Way | | | In Right-of-Way | | |
| B159 | B | 66 | SR 15 | 107 | | 52 | 54 | In Right-of-Way | | | In Right-of-Way | | |
| B160 | B | 66 | SR 15 | 97 | | 62 | 64 | In Right-of-Way | | | In Right-of-Way | | |
| B161 | B | 66 | SR 15 | 512 | | 48 | 49 | 387 | 52 | 4 | 387 | 52 | 4 |
| B162 | B | 66 | SR 15 | 550 | | 47 | 49 | 425 | 52 | 5 | 425 | 52 | 5 |
| B163 | B | 66 | SR 15 | 81 | | 64 | 65 | In Right-of-Way | | | In Right-of-Way | | |
| B164 | B | 66 | SR 15 | 605 | | 46 | 47 | 632 | 48 | 2 | 632 | 48 | 2 |
| B165 | B | 66 | SR 15 | 148 | | 59 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B166 | B | 66 | SR 15 | 140 | | 59 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B167 | B | 66 | SR 15 | 121 | | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B168 | B | 66 | SR 15 | 138 | | 59 | 61 | In Right-of-Way | | | In Right-of-Way | | |
| B169 | B | 66 | SR 15 | 310 | | 52 | 53 | 183 | 57 | 5 | 183 | 57 | 5 |
| B170 | B | 66 | SR 15 | 359 | | 51 | 52 | 234 | 55 | 4 | 234 | 55 | 4 |
| B171 | B | 66 | SR 15 | 218 | | 55 | 56 | In Right-of-Way | | | In Right-of-Way | | |
| B172 | B | 66 | SR 15 | 626 | | 46 | 48 | 501 | 49 | 3 | 501 | 49 | 3 |
| B173 | B | 66 | SR 15 | 215 | | 55 | 56 | In Right-of-Way | | | In Right-of-Way | | |
| B174 | B | 66 | SR 15 | 250 | | 54 | 55 | In Right-of-Way | | | In Right-of-Way | | |
| B175 | B | 66 | SR 15 | 72 | | 64 | 66 | In Right-of-Way | | | In Right-of-Way | | |
| B176 | B | 66 | SR 15 | 470 | | 48 | 50 | 345 | 52 | 4 | 345 | 52 | 4 |
| B177 | B | 66 | SR 15 | 55 | | 65 | 67 | In Right-of-Way | | | In Right-of-Way | | |
| B178 | B | 66 | SR 15 | 162 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B179 | B | 66 | SR 15 | 543 | | 47 | 48 | 543 | 49 | 2 | 543 | 49 | 2 |
| B180 | B | 66 | SR 15 | 99 | | 62 | 63 | In Right-of-Way | | | In Right-of-Way | | |
| B181 | B | 66 | SR 15 | 92 | | 63 | 64 | In Right-of-Way | | | In Right-of-Way | | |
| B182 | B | 66 | SR 15 | 274 | | 54 | 54 | In Right-of-Way | | | In Right-of-Way | | |
| B183 | B | 66 | SR 15 | 472 | | 51 | 52 | 346 | 54 | 3 | 346 | 54 | 3 |
| B184 | B | 66 | SR 15 | 596 | | 51 | 51 | 471 | 52 | 1 | 471 | 52 | 1 |
| B185 | B | 66 | SR 15 | 802 | | 50 | 50 | 677 | 51 | 1 | 677 | 51 | 1 |
| B186 | B | 66 | SR 15 | 754 | | 51 | 51 | 630 | 52 | 1 | 630 | 52 | 1 |
| B187 | B | 66 | SR 15 | 492 | | 52 | 52 | 367 | 54 | 2 | 367 | 54 | 2 |
| B188 | B | 66 | SR 15 | 287 | | 55 | 55 | In Right-of-Way | | | In Right-of-Way | | |
| B189 | B | 66 | CR 302 / SR 15 | 31 / 5566 | | 45 | 45 | 5524 | 45 | 0 | 5524 | 45 | 0 |
| B190 | B | 66 | SR 15 | 146 | | 59 | 60 | In Right-of-Way | | | In Right-of-Way | | |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B191 | B | 66 | SR 15 | 688 | | 45 | 46 | 688 | 46 | 1 | 688 | 46 | 1 |
| B192 | B | 66 | SR 15 | 167 | | 57 | 58 | In Right-of-Way | | | In Right-of-Way | | |
| B193 | B | 66 | SR 15 | 102 | | 60 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| B194 | B | 66 | SR 15 | 263 | | 53 | 54 | In Right-of-Way | | | In Right-of-Way | | |
| B195 | B | 66 | SR 15 | 429 | | 49 | 50 | 429 | 50 | 1 | 429 | 50 | 1 |
| B196 | B | 66 | SR 15 | 303 | | 51 | 53 | In Right-of-Way | | | In Right-of-Way | | |
| B197 | B | 66 | SR 15 | 217 | | 55 | 56 | In Right-of-Way | | | In Right-of-Way | | |
| B198 | B | 66 | SR 15 | 172 | | 57 | 58 | In Right-of-Way | | | In Right-of-Way | | |
| B199 | B | 66 | SR 15 | 154 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B200 | B | 66 | SR 15 | 307 | | 51 | 53 | 307 | 53 | 2 | 307 | 53 | 2 |
| B201 | B | 66 | SR 15 | 146 | | 58 | 59 | In Right-of-Way | | | In Right-of-Way | | |
| B202 | B | 66 | SR 15 | 61 | | 65 | 66 | In Right-of-Way | | | In Right-of-Way | | |
| B203 | B | 66 | SR 15 | 66 | | 65 | 66 | In Right-of-Way | | | In Right-of-Way | | |
| B204 | B | 66 | SR 15 | 838 | | 45 | 45 | 714 | 45 | 0 | 714 | 45 | 0 |
| B205 | B | 66 | SR 15 | 138 | | 57 | 58 | In Right-of-Way | | | In Right-of-Way | | |
| B206 | B | 66 | CR 306 / SR 15 | 750 / 2383 | | 45 | 45 | 2363 | 45 | 0 | 2363 | 45 | 0 |
| B207 | B | 66 | CR 306 / SR 15 | 90 / 4303 | | 45 | 45 | 4226 | 45 | 0 | 4226 | 45 | 0 |
| B208 | B | 66 | CR 306 / SR 15 | 37 / 4049 | | 45 | 45 | 4022 | 45 | 0 | 4022 | 45 | 0 |
| B209 | B | 66 | CR 306 / SR 15 | 199 / 3851 | | 45 | 45 | 3812 | 45 | 0 | 3812 | 45 | 0 |
| B210 | B | 66 | CR 306 / SR 15 | 209 / 3567 | | 45 | 45 | 3527 | 45 | 0 | 3527 | 45 | 0 |
| B211 | B | 66 | CR 305 / SR 15 | 127 / 3196 | | 45 | 45 | 3166 | 45 | 0 | 3166 | 45 | 0 |
| B212 | B | 66 | CR 306 / SR 15 | 156 / 2406 | | 45 | 45 | 2368 | 45 | 0 | 2368 | 45 | 0 |
| B213 | B | 66 | CR 302 / SR 15 | 225 / 4470 | | 45 | 45 | 4437 | 45 | 0 | 4437 | 45 | 0 |
| B214 | B | 66 | CR 302 / SR 15 | 54 / 4006 | | 45 | 45 | 3969 | 45 | 0 | 3969 | 45 | 0 |
| B215 | B | 66 | CR 302 / SR 15 | 13 / 3857 | | 45 | 45 | 3811 | 45 | 0 | 3811 | 45 | 0 |
| B216 | B | 66 | CR 302 / SR 15 | 73 / 4017 | | 45 | 45 | 3977 | 45 | 0 | 3977 | 45 | 0 |
| B217 | B | 66 | CR 302 / SR 15 | 98 / 3860 | | 45 | 45 | 3824 | 45 | 0 | 3824 | 45 | 0 |
| B218 | B | 66 | CR 302 / SR 15 | 31 / 3706 | | 45 | 45 | 3666 | 45 | 0 | 3666 | 45 | 0 |
| B219 | B | 66 | CR 302 / SR 15 | 16 / 3610 | | 45 | 45 | 3574 | 45 | 0 | 3574 | 45 | 0 |
| B220 | B | 66 | CR 302 / SR 15 | 100 / 3679 | | 45 | 45 | 3647 | 45 | 0 | 3647 | 45 | 0 |
| B221 | B | 66 | CR 302 / SR 15 | 115 / 3490 | | 45 | 45 | 3462 | 45 | 0 | 3462 | 45 | 0 |
| B222 | B | 66 | US 72 | 77 | | 68 | 71 | 77 | 71 | 3 | 77 | 71 | 3 |
| B223 | B | 66 | US 72 | 270 | | 58 | 61 | 270 | 61 | 3 | 270 | 61 | 3 |
| B224 | B | 66 | US 72 | 84 | | 66 | 69 | 84 | 69 | 3 | 84 | 69 | 3 |
| B225 | B | 66 | US 72 | 601 | | 52 | 55 | 601 | 55 | 3 | 601 | 55 | 3 |
| B226 | B | 66 | US 72 | 397 | | 56 | 59 | 397 | 59 | 3 | 397 | 59 | 3 |
| B227 | B | 66 | CR 302 / SR 15 | 43 / 5470 | | 45 | 46 | 5435 | 46 | 1 | 5435 | 47 | 2 |
| B228 | B | 66 | CR 305 / SR 15 | 79 / 3476 | | 45 | 45 | 3446 | 45 | 0 | 3446 | 45 | 0 |
| B229 | B | 66 | CR 305 / SR 15 | 155 / 3571 | | 45 | 45 | 3537 | 45 | 0 | 3537 | 45 | 0 |
| B232 | B | 66 | US 72 | 434 | | 55 | 59 | 434 | 59 | 4 | 434 | 59 | 4 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 No-Build | 2040 Build Alternative B-1 | | | 2040 Build Alternative B-2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Predicted (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B233 | B | 66 | US 72 | 597 | | 48 | 51 | 597 | 51 | 3 | 597 | 51 | 3 |
| B234 | B | 66 | US 72 | 230 | | 52 | 55 | 230 | 55 | 3 | 230 | 55 | 3 |
| B235 | B | 66 | US 72 | 282 | | 56 | 59 | 282 | 59 | 3 | 282 | 59 | 3 |
| B236 | B | 66 | US 72 | 611 | | 49 | 53 | 611 | 53 | 4 | 611 | 53 | 4 |
| B237 | B | 66 | US 72 | 798 | | 47 | 50 | 798 | 50 | 3 | 798 | 50 | 3 |
| B238 | B | 66 | US 72 | 678 | | 49 | 52 | 678 | 52 | 3 | 678 | 52 | 3 |
| B239 | B | 66 | US 72 | 831 | | 47 | 51 | 831 | 51 | 4 | 831 | 51 | 4 |
| C1 | C | 66 | US 72 | 280 | | 56 | 59 | 280 | 59 | 3 | 401 | 58 | 2 |
| C2 | C | 66 | SR 15 | 900 | | 54 | 55 | 858 | 56 | 2 | 858 | 56 | 2 |
| C3 | C | 66 | SR 15 | 54 | | 62 | 63 | 54 | 65 | 3 | 54 | 65 | 3 |
| C4 | C | 66 | SR 15 | 452 | | 48 | 50 | 452 | 53 | 5 | 452 | 54 | 6 |
| C5 | C | 66 | SR 15 | 185 | | 54 | 56 | 185 | 60 | 6 | 185 | 60 | 6 |
| C6 | C | 66 | SR 15 | 180 | | 62 | 65 | 180 | 66 | 4 | 180 | 66 | 4 |
| D1 | D | 52* | SR 15 | 895 | | 40** | 42** | 868 | 42** | 2 | 868 | 42** | 2 |
| D2 | D | 52* | SR 15 | 774 | | 27** | 30** | 734 | 31** | 4 | 734 | 33** | 6 |
| D3 | D | 52* | SR 15 | 114 | | 37** | 38** | 114 | 39** | 2 | 114 | 39** | 2 |
| D4 | D | 52* | SR 15 | 138 | | 37** | 38** | 138 | 42** | 5 | 138 | 42** | 5 |
| D5 | D | 52* | SR 15 | 444 | | 26** | 27** | 444 | 31** | 5 | 444 | 31** | 5 |
| D6 | D | 52* | SR 15 | 304 | | 28** | 30** | 304 | 34** | 6 | 304 | 34** | 6 |
| D7 | D | 52* | SR 15 | 313 | | 28** | 30** | 313 | 34** | 6 | 313 | 34** | 6 |
| D8 | D | 52* | US 72 | 155 | | 42** | 45** | 155 | 45** | 3 | 155 | 45** | 3 |
| E1 | E | 71 | US 72 | 182 | | 58 | 60 | 182 | 63 | 5 | 456 | 58 | 0 |
| E2 | E | 71 | SR 15 | 67 | | 61 | 62 | In Right-of-Way | | | In Right-of-Way | | |
| E3 | E | 71 | SR 15 | 174 | | 53 | 54 | 174 | 57 | 4 | 174 | 57 | 4 |
| E4 | E | 71 | SR 15 | 58 | | 62 | 63 | 58 | 63 | 1 | 58 | 63 | 1 |
| E5 | E | 71 | SR 15 | 300 | | 54 | 56 | 300 | 57 | 3 | 300 | 57 | 3 |
| E6 | E | 71 | SR 15 | 380 | | 51 | 52 | 380 | 54 | 3 | 380 | 54 | 3 |
| E7 | E | 71 | SR 15 | 61 | | 60 | 62 | 61 | 65 | 5 | 61 | 65 | 5 |
| E8 | E | 71 | SR 15 | 258 | | 56 | 59 | 258 | 60 | 4 | 258 | 60 | 4 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| 1 | B | 66 | SR 15 | 66 | 62 | 64 | In Right-of-Way | | | |
| 2 | B | 66 | SR 15 | 62 | 67 | 64 | In Right-of-Way | | | |
| 3 | B | 66 | SR 15 | 112 | 63 | 61 | In Right-of-Way | | | |
| 4 | C | 66 | SR 15 | 185 | 67 | 62 | 185 | 1286 | 57 | -5 |
| 5 | B | 66 | SR 15 | 43 | 68 | 62 | 43 | 43 | 61 | -1 |
| 6 | B | 66 | SR 15 | 178 | 63 | 58 | 178 | 2648 | 56 | -2 |
| 7 | E | 66 | SR 15 | 460 | 63 | 56 | 460 | 3086 | 60 | 4 |
| 8 | B | 66 | US 72 | 232 | 64 | 63 | In Right-of-Way | | | |
| 9 | B | 66 | US 72 | 138 | 63 | 60 | - | 138 | 64 | 4 |
| 10 | B | 66 | CR 116 / SR 15 | 36 / 1287 | 47 | 45 | In Right-of-Way | | | |
| 11 | B | 66 | CR 306 / SR 15 | 103 / 3071 | 46 | 45 | In Right-of-Way | | | |
| 12 | B | 66 | SR 15 | 118 | 61 | 60 | - | 118 | 63 | 3 |
| 13 | B | 66 | CR 302 / SR 15 | 90 / 4163 | 45 | 45 | In Right-of-Way | | | |
| 14 | C | 66 | US 72 | 275 | 54 | 57 | - | 275 | 60 | 3 |
| B1 | B | 66 | US 72 | 258 | | 56 | - | 258 | 60 | 4 |
| B2 | B | 66 | US 72 | 345 | | 54 | - | 345 | 58 | 4 |
| B3 | B | 66 | US 72 | 460 | | 52 | - | 460 | 56 | 4 |
| B4 | B | 66 | US 72 | 386 | | 53 | - | 386 | 57 | 4 |
| B5 | B | 66 | US 72 | 393 | | 53 | - | 393 | 57 | 4 |
| B6 | B | 66 | US 72 | 393 | | 53 | - | 393 | 57 | 4 |
| B7 | B | 66 | US 72 | 400 | | 53 | - | 400 | 57 | 4 |
| B8 | B | 66 | US 72 | 487 | | 51 | - | 487 | 56 | 5 |
| B9 | B | 66 | US 72 | 380 | | 56 | - | 380 | 60 | 4 |
| B10 | B | 66 | SR 15 | 909 | | 61 | 873 | 3275 | 63 | 2 |
| B11 | B | 66 | US 72 | 395 | | 55 | - | 395 | 58 | 3 |
| B12 | B | 66 | SR 15 | 800 | | 53 | 800 | 2872 | 56 | 3 |
| B13 | B | 66 | SR 15 | 742 | | 53 | 742 | 2904 | 56 | 3 |
| B14 | B | 66 | SR 15 | 715 | | 52 | 715 | 2920 | 55 | 3 |
| B15 | B | 66 | SR 15 | 644 | | 52 | 644 | 2946 | 55 | 3 |
| B16 | B | 66 | SR 15 | 617 | | 52 | 617 | 2992 | 55 | 3 |
| B17 | B | 66 | SR 15 | 548 | | 51 | 548 | 2992 | 54 | 3 |
| B18 | B | 66 | SR 15 | 510 | | 52 | 510 | 3013 | 54 | 2 |
| B19 | B | 66 | SR 15 | 461 | | 52 | 461 | 3043 | 55 | 3 |
| B20 | B | 66 | SR 15 | 429 | | 52 | 429 | 3061 | 55 | 3 |
| B21 | B | 66 | SR 15 | 832 | | 53 | 832 | 2928 | 56 | 3 |
| B22 | B | 66 | SR 15 | 790 | | 53 | 790 | 2948 | 56 | 3 |
| B23 | B | 66 | SR 15 | 719 | | 53 | 719 | 2983 | 56 | 3 |
| B24 | B | 66 | SR 15 | 683 | | 53 | 683 | 3003 | 55 | 2 |
| B25 | B | 66 | SR 15 | 605 | | 53 | 605 | 3035 | 56 | 3 |
| B26 | B | 66 | SR 15 | 569 | | 53 | 569 | 3054 | 55 | 2 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B27 | B | 66 | SR 15 | 495 | | 53 | 495 | 3088 | 55 | 2 |
| B28 | B | 66 | SR 15 | 458 | | 54 | 458 | 3106 | 56 | 2 |
| B29 | B | 66 | SR 15 | 341 | | 52 | 341 | 3214 | 54 | 2 |
| B30 | B | 66 | SR 15 | 548 | | 48 | 548 | 3333 | 51 | 3 |
| B31 | B | 66 | SR 15 | 43 | | 62 | 43 | 4242 | 61 | -1 |
| B32 | B | 66 | SR 15 | 60 | | 61 | 60 | 3863 | 60 | -1 |
| B33 | B | 66 | SR 15 | 60 | | 61 | 60 | 4000 | 59 | -2 |
| B34 | B | 66 | SR 15 | 60 | | 61 | 60 | 4064 | 60 | -1 |
| B35 | B | 66 | SR 15 | 80 | | 59 | 80 | 4136 | 58 | -1 |
| B36 | B | 66 | SR 15 | 100 | | 58 | 100 | 4184 | 56 | -2 |
| B37 | B | 66 | SR 15 | 75 | | 59 | 75 | 4236 | 57 | -2 |
| B38 | B | 66 | SR 15 | 434 | | 48 | 434 | 3909 | 49 | 1 |
| B39 | B | 66 | SR 15 | 620 | | 48 | 620 | 3751 | 50 | 2 |
| B40 | B | 66 | SR 15 | 722 | | 48 | 722 | 3642 | 50 | 2 |
| B41 | B | 66 | SR 15 | 54 | | 61 | 54 | 4354 | 59 | -2 |
| B42 | B | 66 | SR 15 | 190 | | 55 | 190 | 3201 | 53 | -2 |
| B43 | B | 66 | SR 15 | 256 | | 54 | 256 | 3075 | 52 | -2 |
| B44 | B | 66 | SR 15 | 456 | | 50 | 456 | 2946 | 49 | -1 |
| B45 | B | 66 | SR 15 | 540 | | 49 | 540 | 2908 | 47 | -2 |
| B46 | B | 66 | SR 15 | 670 | | 46 | 670 | 2870 | 46 | 0 |
| B47 | B | 66 | SR 15 | 707 | | 45 | 707 | 2825 | 44 | -1 |
| B48 | B | 66 | SR 15 | 323 | | 52 | 323 | 2794 | 51 | -1 |
| B49 | B | 66 | SR 15 | 120 | | 60 | 120 | 2890 | 59 | -1 |
| B50 | B | 66 | SR 15 | 746 | | 46 | 746 | 2209 | 45 | -1 |
| B51 | B | 66 | SR 15 | 124 | | 59 | 124 | 2712 | 57 | -2 |
| B52 | B | 66 | SR 15 | 986 | | 45 | 986 | 635 | 47 | 2 |
| B53 | B | 66 | SR 15 | 720 | | 45 | 720 | 408 | 51 | 6 |
| B54 | B | 66 | SR 15 | 554 | | 48 | 554 | 257 | 56 | 8 |
| B55 | B | 66 | SR 15 | 110 | | 61 | In Right-of-Way | | | |
| B56 | B | 66 | SR 15 | 428 | | 49 | - | 281 | 53 | 4 |
| B57 | B | 66 | SR 15 | 833 | | 45 | - | 702 | 46 | 1 |
| B58 | B | 66 | SR 15 | 334 | | 52 | - | 334 | 54 | 2 |
| B59 | B | 66 | SR 15 | 480 | | 49 | - | 480 | 51 | 2 |
| B60 | B | 66 | SR 15 | 356 | | 52 | - | 356 | 54 | 2 |
| B61 | B | 66 | SR 15 | 306 | | 53 | - | 306 | 55 | 2 |
| B66 | B | 66 | SR 15 | 295 | | 52 | - | 295 | 55 | 3 |
| B67 | B | 66 | SR 15 | 231 | | 55 | - | 237 | 56 | 1 |
| B68 | B | 66 | SR 15 | 143 | | 60 | - | 207 | 57 | -3 |
| B69 | B | 66 | SR 15 | 114 | | 62 | 114 | 3156 | 60 | -2 |
| B70 | B | 66 | SR 15 | 417 | | 46 | 417 | 4748 | 45 | -1 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B71 | B | 66 | SR 15 | 456 | | 45 | 456 | 4858 | 45 | 0 |
| B72 | B | 66 | SR 15 | 451 | | 45 | 451 | 5111 | 46 | 1 |
| B73 | B | 66 | SR 15 | 484 | | 46 | 484 | 5141 | 46 | 0 |
| B74 | B | 66 | SR 15 | 493 | | 45 | 493 | 5153 | 46 | 1 |
| B75 | B | 66 | SR 15 | 493 | | 45 | 493 | 5159 | 46 | 1 |
| B76 | B | 66 | SR 15 | 520 | | 45 | 520 | 5209 | 46 | 1 |
| B77 | B | 66 | SR 15 | 60 | | 61 | 60 | 4599 | 60 | -1 |
| B78 | B | 66 | SR 15 | 546 | | 45 | 546 | 5055 | 46 | 1 |
| B79 | B | 66 | SR 15 | 493 | | 49 | 493 | 4929 | 50 | 1 |
| B80 | B | 66 | SR 15 | 272 | | 53 | 272 | 4703 | 53 | 0 |
| B81 | B | 66 | SR 15 | 79 | | 60 | 79 | 4464 | 58 | -2 |
| B82 | B | 66 | SR 15 | 536 | | 46 | 536 | 4925 | 48 | 2 |
| B83 | B | 66 | SR 15 | 717 | | 46 | 717 | 4623 | 47 | 1 |
| B84 | B | 66 | SR 15 | 512 | | 47 | 512 | 4474 | 48 | 1 |
| B85 | B | 66 | SR 15 | 101 | | 58 | 101 | 4203 | 57 | -1 |
| B86 | B | 66 | SR 15 | 106 | | 58 | 106 | 4118 | 56 | -2 |
| B87 | B | 66 | SR 15 | 517 | | 47 | 517 | 4358 | 48 | 1 |
| B88 | B | 66 | SR 15 | 715 | | 46 | 715 | 4511 | 47 | 1 |
| B89 | B | 66 | SR 15 | 730 | | 46 | 730 | 4447 | 48 | 2 |
| B90 | B | 66 | SR 15 | 746 | | 45 | 746 | 4364 | 47 | 2 |
| B91 | B | 66 | SR 15 | 541 | | 47 | 541 | 4267 | 48 | 1 |
| B92 | B | 66 | US 72 | 215 | | 59 | In Right-of-Way | | | |
| B93 | B | 66 | SR 15 | 46 | | 62 | 46 | 3878 | 60 | -2 |
| B94 | B | 66 | SR 15 | 55 | | 61 | 55 | 3838 | 60 | -1 |
| B95 | B | 66 | SR 15 | 61 | | 61 | 61 | 3790 | 59 | -2 |
| B96 | B | 66 | SR 15 | 344 | | 51 | 344 | 3698 | 53 | 2 |
| B97 | B | 66 | SR 15 | 250 | | 52 | 250 | 3616 | 53 | 1 |
| B98 | B | 66 | SR 15 | 655 | | 48 | 655 | 3789 | 51 | 3 |
| B99 | B | 66 | SR 15 | 690 | | 49 | 690 | 3718 | 52 | 3 |
| B100 | B | 66 | SR 15 | 694 | | 49 | 694 | 3653 | 52 | 3 |
| B101 | B | 66 | SR 15 | 705 | | 51 | 705 | 3505 | 54 | 3 |
| B102 | B | 66 | SR 15 | 233 | | 52 | 233 | 3481 | 53 | 1 |
| B103 | B | 66 | SR 15 | 244 | | 52 | 244 | 3434 | 53 | 1 |
| B104 | B | 66 | SR 15 | 247 | | 52 | 247 | 3365 | 54 | 2 |
| B105 | B | 66 | US 72 | 337 | | 57 | - | 337 | 61 | 4 |
| B106 | B | 66 | US 72 | 162 | | 61 | - | 162 | 65 | 4 |
| B107 | B | 66 | US 72 | 318 | | 56 | - | 318 | 59 | 3 |
| B108 | B | 66 | US 72 | 427 | | 54 | - | 427 | 57 | 3 |
| B109 | B | 66 | US 72 | 633 | | 50 | - | 633 | 54 | 4 |
| B110 | B | 66 | US 72 | 725 | | 49 | - | 725 | 52 | 3 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B111 | B | 66 | US 72 | 706 | | 49 | - | 706 | 52 | 3 |
| B112 | B | 66 | US 72 | 873 | | 47 | - | 873 | 51 | 4 |
| B113 | B | 66 | US 72 | 273 | | 60 | - | 273 | 63 | 3 |
| B114 | B | 66 | US 72 | 142 | | 62 | - | 142 | 65 | 3 |
| B115 | B | 66 | US 72 | 330 | | 55 | - | 330 | 58 | 3 |
| B116 | B | 66 | US 72 | 381 | | 54 | - | 381 | 57 | 3 |
| B117 | B | 66 | US 72 | 149 | | 62 | - | 149 | 67 | 5 |
| B118 | B | 66 | SR 15 | 128 | | 58 | - | 2021 | 57 | -1 |
| B119 | B | 66 | SR 15 | 119 | | 59 | - | 1853 | 56 | -3 |
| B120 | B | 66 | SR 15 | 77 | | 62 | - | 1734 | 58 | -4 |
| B121 | B | 66 | SR 15 | 69 | | 62 | - | 1642 | 59 | -3 |
| B122 | B | 66 | SR 15 | 60 | | 63 | - | 1560 | 59 | -4 |
| B123 | B | 66 | SR 15 | 75 | | 62 | - | 1490 | 58 | -4 |
| B124 | B | 66 | SR 15 | 125 | | 58 | - | 1533 | 55 | -3 |
| B125 | B | 66 | CR 115 / SR 15 | 58 / 2425 | | 47 | - | 532 | 51 | 4 |
| B126 | B | 66 | CR 115 / SR 15 | 50 / 2112 | | 47 | - | 303 | 54 | 7 |
| B127 | B | 66 | CR 115 / SR 15 | 37 / 168 | | 50 | In Right-of-Way | | | |
| B128 | B | 66 | CR 115 / SR 15 | 90 / 1845 | | 45 | In Right-of-Way | | | |
| B129 | B | 66 | CR 115 / SR 15 | 137 / 1775 | | 45 | In Right-of-Way | | | |
| B130 | B | 66 | CR 115 / SR 15 | 13 / 1504 | | 51 | In Right-of-Way | | | |
| B131 | B | 66 | CR 116 / SR 15 | 57 / 2086 | | 45 | In Right-of-Way | | | |
| B132 | B | 66 | CR 116 / SR 15 | 440 / 1600 | | 45 | - | 493 | | |
| B133 | B | 66 | CR 116 / SR 15 | 244 / 1287 | | 45 | In Right-of-Way | | | |
| B134 | B | 66 | CR 115 / SR 15 | 34 / 1135 | | 51 | In Right-of-Way | | | |
| B135 | B | 66 | SR 15 | 286 | | 52 | - | 290 | 49 | -3 |
| B136 | B | 66 | SR 15 | 202 | | 55 | - | 419 | 53 | -2 |
| B137 | B | 66 | SR 15 | 584 | | 46 | - | 234 | 56 | 10 |
| B138 | B | 66 | SR 15 | 212 | | 54 | In Right-of-Way | | | |
| B139 | B | 66 | SR 15 | 173 | | 55 | In Right-of-Way | | | |
| B140 | B | 66 | SR 15 | 310 | | 52 | - | 251 | 56 | 4 |
| B141 | B | 66 | SR 15 | 520 | | 47 | - | 457 | 50 | 3 |
| B142 | B | 66 | SR 15 | 194 | | 56 | In Right-of-Way | | | |
| B143 | B | 66 | SR 15 | 69 | | 64 | In Right-of-Way | | | |
| B144 | B | 66 | SR 15 | 634 | | 45 | - | 571 | 49 | 4 |
| B145 | B | 66 | SR 15 | 176 | | 57 | In Right-of-Way | | | |
| B146 | B | 66 | SR 15 | 122 | | 58 | In Right-of-Way | | | |
| B147 | B | 66 | SR 15 | 131 | | 59 | In Right-of-Way | | | |
| B148 | B | 66 | SR 15 | 131 | | 59 | In Right-of-Way | | | |
| B149 | B | 66 | SR 15 | 109 | | 61 | In Right-of-Way | | | |
| B150 | B | 66 | SR 15 | 148 | | 59 | In Right-of-Way | | | |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B151 | B | 66 | SR 15 | 123 | | 60 | In Right-of-Way | | | |
| B152 | B | 66 | SR 15 | 329 | | 51 | - | 259 | 55 | 4 |
| B153 | B | 66 | SR 15 | 151 | | 58 | In Right-of-Way | | | |
| B154 | B | 66 | SR 15 | 670 | | 45 | - | 594 | 49 | 4 |
| B155 | B | 66 | SR 15 | 163 | | 58 | In Right-of-Way | | | |
| B156 | B | 66 | SR 15 | 269 | | 53 | In Right-of-Way | | | |
| B157 | B | 66 | SR 15 | 162 | | 58 | In Right-of-Way | | | |
| B158 | B | 66 | SR 15 | 297 | | 61 | In Right-of-Way | | | |
| B159 | B | 66 | SR 15 | 107 | | 52 | In Right-of-Way | | | |
| B160 | B | 66 | SR 15 | 97 | | 62 | In Right-of-Way | | | |
| B161 | B | 66 | SR 15 | 512 | | 48 | - | 477 | 51 | 3 |
| B162 | B | 66 | SR 15 | 550 | | 47 | - | 517 | 51 | 4 |
| B163 | B | 66 | SR 15 | 81 | | 64 | In Right-of-Way | | | |
| B164 | B | 66 | SR 15 | 605 | | 46 | - | 506 | 50 | 4 |
| B165 | B | 66 | SR 15 | 148 | | 59 | In Right-of-Way | | | |
| B166 | B | 66 | SR 15 | 140 | | 59 | In Right-of-Way | | | |
| B167 | B | 66 | SR 15 | 121 | | 61 | In Right-of-Way | | | |
| B168 | B | 66 | SR 15 | 138 | | 59 | In Right-of-Way | | | |
| B169 | B | 66 | SR 15 | 310 | | 52 | - | 310 | 54 | 2 |
| B170 | B | 66 | SR 15 | 359 | | 51 | | 359 | 53 | 2 |
| B171 | B | 66 | SR 15 | 218 | | 55 | In Right-of-Way | | | |
| B172 | B | 66 | SR 15 | 626 | | 46 | - | 626 | 49 | 3 |
| B173 | B | 66 | SR 15 | 215 | | 55 | In Right-of-Way | | | |
| B174 | B | 66 | SR 15 | 250 | | 54 | In Right-of-Way | | | |
| B175 | B | 66 | SR 15 | 72 | | 64 | In Right-of-Way | | | |
| B176 | B | 66 | SR 15 | 470 | | 48 | - | 470 | 51 | 3 |
| B177 | B | 66 | SR 15 | 55 | | 65 | In Right-of-Way | | | |
| B178 | B | 66 | SR 15 | 162 | | 58 | In Right-of-Way | | | |
| B179 | B | 66 | SR 15 | 543 | | 47 | - | 419 | 52 | 5 |
| B180 | B | 66 | SR 15 | 99 | | 62 | In Right-of-Way | | | |
| B181 | B | 66 | SR 15 | 92 | | 63 | In Right-of-Way | | | |
| B182 | B | 66 | SR 15 | 274 | | 54 | In Right-of-Way | | | |
| B183 | B | 66 | SR 15 | 472 | | 51 | - | 472 | 53 | 2 |
| B184 | B | 66 | SR 15 | 596 | | 51 | - | 596 | 52 | 1 |
| B185 | B | 66 | SR 15 | 802 | | 50 | - | 802 | 51 | 1 |
| B186 | B | 66 | SR 15 | 754 | | 51 | - | 754 | 52 | 1 |
| B187 | B | 66 | SR 15 | 492 | | 52 | - | 492 | 53 | 1 |
| B188 | B | 66 | SR 15 | 287 | | 55 | In Right-of-Way | | | |
| B189 | B | 66 | CR 302 / SR 15 | 31 / 5566 | | 45 | - | 840 | 46 | 1 |
| B190 | B | 66 | SR 15 | 146 | | 59 | In Right-of-Way | | | |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B191 | B | 66 | SR 15 | 688 | | 45 | - | 563 | 49 | 4 |
| B192 | B | 66 | SR 15 | 167 | | 57 | In Right-of-Way | | | |
| B193 | B | 66 | SR 15 | 102 | | 60 | In Right-of-Way | | | |
| B194 | B | 66 | SR 15 | 263 | | 53 | In Right-of-Way | | | |
| B195 | B | 66 | SR 15 | 429 | | 49 | - | 304 | 54 | 5 |
| B196 | B | 66 | SR 15 | 303 | | 51 | In Right-of-Way | | | |
| B197 | B | 66 | SR 15 | 217 | | 55 | In Right-of-Way | | | |
| B198 | B | 66 | SR 15 | 172 | | 57 | In Right-of-Way | | | |
| B199 | B | 66 | SR 15 | 154 | | 58 | In Right-of-Way | | | |
| B200 | B | 66 | SR 15 | 307 | | 51 | - | 182 | 58 | 7 |
| B201 | B | 66 | SR 15 | 146 | | 58 | In Right-of-Way | | | |
| B202 | B | 66 | SR 15 | 61 | | 65 | In Right-of-Way | | | |
| B203 | B | 66 | SR 15 | 66 | | 65 | In Right-of-Way | | | |
| B204 | B | 66 | SR 15 | 838 | | 45 | - | 838 | 45 | 0 |
| B205 | B | 66 | SR 15 | 138 | | 57 | In Right-of-Way | | | |
| B206 | B | 66 | CR 306 / SR 15 | 750 / 2383 | | 45 | In Right-of-Way | | | |
| B207 | B | 66 | CR 306 / SR 15 | 90 / 4303 | | 45 | - | 813 | 45 | 0 |
| B208 | B | 66 | CR 306 / SR 15 | 37 / 4049 | | 45 | - | 535 | 49 | 4 |
| B209 | B | 66 | CR 306 / SR 15 | 199 / 3851 | | 45 | - | 674 | 48 | 3 |
| B210 | B | 66 | CR 306 / SR 15 | 209 / 3567 | | 45 | - | 425 | 51 | 6 |
| B211 | B | 66 | CR 305 / SR 15 | 127 / 3196 | | 45 | In Right-of-Way | | | |
| B212 | B | 66 | CR 306 / SR 15 | 156 / 2406 | | 45 | - | 641 | 48 | 3 |
| B213 | B | 66 | CR 302 / SR 15 | 225 / 4470 | | 45 | In Right-of-Way | | | |
| B214 | B | 66 | CR 302 / SR 15 | 54 / 4006 | | 45 | - | 420 | 50 | 5 |
| B215 | B | 66 | CR 302 / SR 15 | 13 / 3857 | | 45 | In Right-of-Way | | | |
| B216 | B | 66 | CR 302 / SR 15 | 73 / 4017 | | 45 | - | 378 | 51 | 6 |
| B217 | B | 66 | CR 302 / SR 15 | 98 / 3860 | | 45 | - | 487 | 49 | 4 |
| B218 | B | 66 | CR 302 / SR 15 | 31 / 3706 | | 45 | In Right-of-Way | | | |
| B219 | B | 66 | CR 302 / SR 15 | 16 / 3610 | | 45 | In Right-of-Way | | | |
| B220 | B | 66 | CR 302 / SR 15 | 100 / 3679 | | 45 | - | 601 | 47 | 2 |
| B221 | B | 66 | CR 302 / SR 15 | 115 / 3490 | | 45 | - | 727 | 46 | 1 |
| B222 | B | 66 | US 72 | 77 | | 68 | In Right-of-Way | | | |
| B223 | B | 66 | US 72 | 270 | | 58 | - | 270 | 61 | 3 |
| B224 | B | 66 | US 72 | 84 | | 66 | In Right-of-Way | | | |
| B225 | B | 66 | US 72 | 601 | | 52 | - | 591 | 54 | 2 |
| B226 | B | 66 | US 72 | 397 | | 56 | - | 382 | 59 | 3 |
| B227 | B | 66 | CR 302 / SR 15 | 43 / 5470 | | 45 | - | 741 | 47 | 2 |
| B228 | B | 66 | CR 305 / SR 15 | 79 / 3476 | | 45 | - | 516 | 48 | 3 |
| B229 | B | 66 | CR 305 / SR 15 | 155 / 3571 | | 45 | - | 317 | 52 | 7 |
| B232 | B | 66 | US 72 | 434 | | 55 | - | 434 | 59 | 4 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 1
Noise Levels
SR 15, Tippah County, MS

| General Information | | | Existing 2011 | | | | 2040 Build Alternative C | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Noise Receptor | Activity Category | NAC | Roadway | Distance to EOP (ft) | Measured (dBA) | Predicted (dBA) | Distance to Existing EOP (ft) | Distance to Build EOP (ft) | Predicted (dBA) | Increase from Existing (dBA) |
| B233 | B | 66 | US 72 | 597 | | 48 | - | 597 | 51 | 3 |
| B234 | B | 66 | US 72 | 230 | | 52 | - | 230 | 55 | 3 |
| B235 | B | 66 | US 72 | 282 | | 56 | - | 282 | 60 | 4 |
| B236 | B | 66 | US 72 | 611 | | 49 | - | 611 | 53 | 4 |
| B237 | B | 66 | US 72 | 798 | | 47 | - | 798 | 50 | 3 |
| B238 | B | 66 | US 72 | 678 | | 49 | - | 678 | 53 | 4 |
| B239 | B | 66 | US 72 | 831 | | 47 | - | 831 | 51 | 4 |
| C1 | C | 66 | US 72 | 280 | | 56 | - | 280 | 59 | 3 |
| C2 | C | 66 | SR 15 | 900 | | 54 | - | 3341 | 56 | 2 |
| C3 | C | 66 | SR 15 | 54 | | 62 | 54 | 4475 | 60 | -2 |
| C4 | C | 66 | SR 15 | 452 | | 48 | 452 | 4726 | 50 | 2 |
| C5 | C | 66 | SR 15 | 185 | | 54 | 185 | 1440 | 52 | -2 |
| C6 | C | 66 | SR 15 | 180 | | 62 | - | 154 | 65 | 3 |
| D1 | D | 52* | SR 15 | 895 | | 40** | 868 | 2725 | 42** | 2 |
| D2 | D | 52* | SR 15 | 774 | | 27** | 734 | 3499 | 31** | 4 |
| D3 | D | 52* | SR 15 | 114 | | 37** | 114 | 4259 | 35** | -2 |
| D4 | D | 52* | SR 15 | 138 | | 37** | 138 | 1020 | 36** | -1 |
| D5 | D | 52* | SR 15 | 444 | | 26** | 444 | 5004 | 26** | 0 |
| D6 | D | 52* | SR 15 | 304 | | 28** | 304 | 5006 | 28** | 0 |
| D7 | D | 52* | SR 15 | 313 | | 28** | 313 | 4834 | 28** | 0 |
| D8 | D | 52* | US 72 | 155 | | 42** | - | 155 | 45** | 3 |
| E1 | E | 71 | US 72 | 182 | | 58 | - | 182 | 64 | 6 |
| E2 | E | 71 | SR 15 | 67 | | 61 | - | 4423 | 59 | -2 |
| E3 | E | 71 | SR 15 | 174 | | 53 | - | 4731 | 52 | -1 |
| E4 | E | 71 | SR 15 | 58 | | 62 | - | 4608 | 60 | -2 |
| E5 | E | 71 | SR 15 | 300 | | 54 | - | 4747 | 55 | 1 |
| E6 | E | 71 | SR 15 | 380 | | 51 | - | 4835 | 52 | 1 |
| E7 | E | 71 | SR 15 | 61 | | 60 | - | 3566 | 59 | -1 |
| E8 | E | 71 | SR 15 | 258 | | 56 | - | 3016 | 59 | 3 |

*Interior Use NAC
**Calculated by subtracting noise reduction factor (20dBA) from predicted exterior noise level.
Yellow shading indicates noise impact
Blue shading indicates ambient noise level substituted for predicted level.

Appendix F Table 2
Noise Contour Setback Distances
SR 15, Tippah County, MS

| Highway / Section | Alternative | DHV | % Trucks | Acoustically Hard | | Acoustically Soft Sites | |
|---|---|---|---|---|---|---|---|
| | | | | 66 dBA Contour | 71 dBA Contour | 66 dBA Contour | 71 dBA Contour |
| SR 15 - State Line to CR 102 | 2040 Alt B-1 | 397 | 11 | 80 | 15 | 60 | 10 |
| | 2040 Alt B-2 | 397 | 11 | 80 | 15 | 60 | 10 |
| | 2040 Alt C | 548 | 10 | 100 | 20 | 70 | 20 |
| SR 15 -CR 102 to CR115 | 2040 Alt B-1 | 414 | 10 | 90 | 20 | 70 | 15 |
| | 2040 Alt B-2 | 414 | 10 | 90 | 20 | 70 | 15 |
| | 2040 Alt C | 572 | 10 | 100 | 25 | 75 | 20 |
| SR 15 - CR 115 to US 72 | 2040 Alt B-1 | 451 | 10 | 110 | 25 | 85 | 15 |
| | 2040 Alt B-2 | 451 | 10 | 100 | 20 | 85 | 15 |
| | 2040 Alt C | 462 | 8 | 80 | 15 | 70 | 15 |
| SR 15 - Main to CR 302 | 2040 Alt B-1 | 420 | 10 | 110 | 30 | 95 | 20 |
| | 2040 Alt B-2 | 420 | 10 | 110 | 30 | 95 | 20 |
| | 2040 Alt C | 269 | 10 | 50 | 0 | 40 | 0 |
| SR 15 - CR 302 to CR 312 | 2040 Alt B-1 | 463 | 11 | 130 | 45 | 110 | 40 |
| | 2040 Alt B-2 | 463 | 11 | 130 | 45 | 110 | 40 |
| | 2040 Alt C | 296 | 11 | 130 | 45 | 110 | 40 |
| US 72 - West of McCoy | 2040 Alt B-1 | 1234 | 20 | >200 | 100 | 170 | 90 |
| | 2040 Alt B-2 | 1234 | 20 | >200 | 100 | 170 | 90 |
| | 2040 Alt C | 1234 | 20 | >200 | 100 | 170 | 90 |
| US 72 - East of Mill | 2040 Alt B-1 | 1396 | 19 | 200 | 0 | 90 | 0 |
| | 2040 Alt B-2 | 1396 | 19 | 200 | 0 | 90 | 0 |
| | 2040 Alt C | 1396 | 19 | 200 | 0 | 90 | 0 |

# APPENDIX G – NOISE BARRIER EVALUATION FORMS

**NOISE BARRIER EVALUATION FORM**

Proposed Project: Improvements to SR 15 from the vicinity of CR 312 to Tennessee State Line
Location: Receptor 8

## FEASIBILITY

Can a 5 dBA noise reduction be achieved at any impacted receptors? **YES**

If yes complete the reasonableness section.
If no, a noise barrier should not be constructed. No additional analysis is required.

## REASONABLENESS

| | | Not Reasonable | Marginally Reasonable | Fully Reasonable | Highly Reasonable |
|---|---|---|---|---|---|
| REQUIRED FACTORS: * | | | | | |
| 1. | % of benefited receptors wanting barrier | <50% | 50-60% | 61-75% | >75% |
| 2. | cost/receptor | >$30K | $26K-$30K | $20K-$25K | <$20K |
| 3. | % of benefited receptors with 7 dBA noise reduction | <10% | 10%-20% | 21%-40% | >40% |
| OPTIONAL FACTORS: ** | | | | | |
| 4. | % developed before public knowledge of proposed project | <20% | 20%-30% | 31%-40% | .>40% |
| 5. | % developed before highway constructed | <20% | 20%-30% | 31%-40% | >40% |
| 6. | Build level ___ dBA Greater than existing | <3dBA | 3-4 | 5-10 | >10 |
| 7. | Build level ___ dBA Greater than no-build | <2dBA | 2 | 3-5 | >5 |
| 8. | Build level above Noise abatement criteria | not applicable | not applicable | 0-3 dBA above | > 3 dBA above |

9. ADDITIONAL CONSIDERATIONS: _By selection of Build Alternative B-2 or C, impacts to this receptor may be avoided. For #5, the % developed before construction of SR15 was unknown so 0% was assumed.

DECISION AND REASONS: __Not Reasonable – #2, #3

* 23 CFR 772.13(d)(2)(iv) requires that reasonableness factors 1-3 must each be achieved for a noise abatement measure to be considered reasonable.

** 23 CFR 772.13(d)(2)(iv) allows consideration of these optional abatement factors, which cannot singly eliminate an abatement measure that meets the requirements of 1-3 above.

**NOISE BARRIER EVALUATION FORM**

Proposed Project: Improvements to SR 15 from the vicinity of CR 312 to Tennessee State Line
Location: Receptor B123

## FEASIBILITY

Can a 5 dBA noise reduction be achieved at any impacted receptors? **YES**

If yes complete the reasonableness section.
If no, a noise barrier should not be constructed. No additional analysis is required.

## REASONABLENESS

| | | Not Reasonable | Marginally Reasonable | Fully Reasonable | Highly Reasonable |
|---|---|---|---|---|---|
| REQUIRED FACTORS: * | | | | | |
| 1. | % of benefited receptors wanting barrier | <50% | 50-60% | 61-75% | >75% |
| 2. | cost/receptor | >$30K | $26K-$30K | $20K-$25K | <$20K |
| 3. | % of benefited receptors with 7 dBA noise reduction | <10% | 10%-20% | 21%-40% | >40% |
| OPTIONAL FACTORS: ** | | | | | |
| 4. | % developed before public knowledge of proposed project | <20% | 20%-30% | 31%-40% | .>40% |
| 5. | % developed before highway constructed | <20% | 20%-30% | 31%-40% | >40% |
| 6. | Build level ___ dBA Greater than existing | <3dBA | 3-4 | 5-10 | >10 |
| 7. | Build level ___ dBA Greater than no-build | <2dBA | 2 | 3-5 | >5 |
| 8. | Build level above Noise abatement criteria | not applicable | not applicable | 0-3 dBA above | > 3 dBA above |

9. ADDITIONAL CONSIDERATIONS: _ By selection of Build Alternative C, impacts to this receptor may be avoided. For #5, the % developed before construction of SR15 was unknown so 0% was assumed.

DECISION AND REASONS: __Not Reasonable – #2

* 23 CFR 772.13(d)(2)(iv) requires that reasonableness factors 1-3 must each be achieved for a noise abatement measure to be considered reasonable.

** 23 CFR 772.13(d)(2)(iv) allows consideration of these optional abatement factors, which cannot singly eliminate an abatement measure that meets the requirements of 1-3 above.

# Appendix G

# Ecology

Note: Study was completed for SR 15 from CR 312 to Mississippi/Tennessee State Line

# Ecology Technical Study

## SR 15 Improvements
## Walnut, Tippah County, Mississippi
## Project No. STP-0022-04(037)/101633-001000

*Prepared for*
Gresham Smith & Partners
385-B Highland Colony Parkway, Suite 410
Ridgeland, MS 39157

November 17, 2011
Revised February 20, 2012

*Prepared by*
Third Rock Consultants, LLC
2526 Regency Road, Suite 180
Lexington, KY 40503
859.977.2000

Prepared by:

Rain Storm

Reviewed by:

Gina Morris

# Table of Contents

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## TABLES

## EXHIBITS



## APPENDICES

## I. INTRODUCTION

The proposed project is the improvement of State Route (SR) 15 to provide a four-lane facility beginning at County Road (CR) 312, south of Walnut, to the Tennessee State line north of Walnut. Three Build Alternatives are proposed. Alternatives B-1 and B-2 follow the existing SR 15 alignment, but Alternative B-1 utilizes the location of the existing SR 15 and SR 72 intersection, while Alternative B-2 proposes an interchange at the intersection adding longer east and west approaches on SR 72 and more right-of-way to the north of the existing intersection. Alternative C, however, would move the SR 15 and SR 72 intersection to the west, and place SR 15 on new alignment for nearly half of the project length. Alternative C begins at CR 312, south of Walnut, and ends to the north at the Tennessee State line. At the intersection of CR 312 and SR 15, Alternative C begins diverting to the southeast, travels on new alignment intersecting US 72 west of Big Creek, then intersects SR 15 near CR 118 and follows the existing SR 15 alignment to the Tennessee State line.

Studies to determine the impacts of the proposed alternative alignments on the local ecology were conducted by biologists from Third Rock Consultants, LLC. The preliminary study corridors of Alternatives B-1, B-2, and C were examined the week of October 3-7, 2011. Studies included literature and database surveys as well as pedestrian reconnaissance of the alternative corridors. The centerline of the proposed alternatives was located with GPS. Particular attention was given to locating streams, wetlands, and specialized habitats such as glades, prairies, and springs, which could harbor protected species or influence water quality.

## II. PROJECT SETTING

### *A. Ecoregions*

The proposed project is located in north Tippah County, Mississippi, shown on the Walnut USGS 7.5-minute topographic quadrangle (Exhibit 1, page 2). The majority of the project area is in the Flatwood/Blackland Prairie Margins Ecoregion (Chapman *et al.* 2004). The physiography of this region is smooth lowland plains and undulating irregular plains, and some low hills (Chapman *et al.* 2004).

Vegetation in this ecoregion is characterized by mixed oak forest, and oak-hickory-pine forest (Chapman *et al.* 2004). The project area is bordered by the Northern Hilly Gulf Coastal Plain, characterized by dissected hills with rounded tops and gently sloping to strongly sloping side slopes with dissected irregular slopes with mixed oak and pine forests (Chapman *et al.* 2004). Agriculture in the project area is primarily pine plantations, cotton, and pasture, with some soybeans.

*Alternative C, large overcup oak tree in pasture*

Map Document: (P:\Project_Files\Mississippi\MS10-001_GSP_EcologyNoise_SR15\Mapping\GIS\Ex1_Overview.mxd) 11/10/2011 -- 4:04:28 PM las

TENNESSEE

MISSISSIPPI

EXHIBITS 6 & 7

EXHIBITS 4 & 5

EXHIBITS 2 & 3

N

Brownfield

Walnut

Mount Moriah

Tiplersville

Chalybeate

15

72

354

Co Rd 113
Co Rd 121
Co Rd 120
Co Rd 125
Co Rd 126
Co Rd 102
Co Rd 119
Co Rd 124
Co Rd 118
Co Rd 123
Co Rd 116
Mix Branch
Dry Creek
Co Rd 115
Co Rd 114
Co Rd 117
Big Creek
Muddy Creek
Co Rd 302
Co Rd 304
Co Rd 305
Co Rd 215
Co Rd 274
Co Rd 306
Co Rd 217
Co Rd 308
Hurricane Creek
Co Rd 262
Co Rd 235
Co Rd 310
Co Rd 312
Co Rd 62
Co Rd 273
Co Rd 307
Co Rd 276
Co Rd 392

Town
Alternative B Centerline
Alternative C Centerline
Alternative B-1 Right-of-way
Alternative B-2 Right-of-way
Alternative C Right-of-way
State Border
Exhibit Border

0 1,200 2,400 4,800 Feet

Exhibit 1
Site Overview
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

*Alternative C, pasture*

*Commercial area south of 72 on SR15*

*B. Geology and Soils*

The project area is underlain by clay and sand of the Porters Creek Formation (Thompson 1969). Soils in the area are partially within the Ruston-Cuthbert-Providence association, located on steep and very steep side slopes; long rolling ridges; and narrow stream bottoms. These are primarily well drained and moderately well drained sandy and silty soils (Bright 1963). The project area also contains soils in the Wilcox-Dulac-Falkner association, located on wide, flat ridges, short side slopes, and narrow stream bottoms. These are somewhat poorly drained and moderately well drained silty and clayey soils (Bright 1963). Soils in the relatively flat valley bottoms are primarily Falaya silt loam; soils in the steep forested portions of the project area are frequently mapped as Gullied Land (web soil survey). Exhibit 2, page 4, depicts the soil types in the project corridor.

*C. Watersheds*

The project area is located in the Muddy Creek Watershed, which is part of the Upper Hatchie River Watershed. The Upper Hatchie River Watershed covers an area of about 1,461 square miles in Mississippi and Tennessee (TDEC 2007). Muddy Creek flows in a northern direction from its headwaters in central Tippah County across the Tennessee State line to the confluence with the Hatchie River. The Hydrologic Unit Code (HUC) for Muddy Creek in northeast Mississippi is 08010207. The watershed is approximately 64,000 acres (MDEQ 2005). A fecal coliform total maximum daily load (TMDL) has been developed for the segment of Muddy Creek from the headwaters to the Tennessee State line; this portion of Muddy Creek was included on the Mississippi 2002 Section 303 (d) List of Impaired Water Bodies for pathogen impairment (MDEQ 2005). Muddy Creek is not included in the Mississippi 2010 Section 303 (d) List of Impaired Water Bodies, but a tributary that flows through the project area, Dry Creek, is listed for pathogens (MDEQ 2010).

The watershed of Muddy Creek includes urban, forest, cropland, pasture, scrub/barren and wetland land use. The watershed is, however, predominantly forested (MDEQ 2005). The potential nonpoint sources of fecal coliform bacteria for Muddy Creek and its tributaries include: failing septic systems, wildlife, land application of hog and cattle manure, grazing animals, land application of poultry litter, and urban development (MDEQ 2005).

Map Document: (P:\Project_Files\Mississippi\MS10-001_GSP_EcologyNoise_SR15\Mapping\GIS\Ex2_Soils.mxd) 11/16/2011 -- 2:57:36 PM WCO

TENNESSEE

MISSISSIPPI

N

Brownfield
Walnut
Mount Moriah
Tiplersville

Co Rd 102
Co Rd 113
Co Rd 121
Co Rd 120
Co Rd 126
Co Rd 125
Co Rd 119
Co Rd 124
Co Rd 118
Co Rd 123
Co Rd 116
Mix Branch
Dry Creek
Co Rd 115
Co Rd 114
Co Rd 117
Big Creek
Co Rd 302
Co Rd 304
Co Rd 305
Co Rd 215
Co Rd 306
Co Rd 308
Hurricane Creek
Co Rd 217
Co Rd 310
Co Rd 312
Co Rd 307
Co Rd 276
Co Rd 392

15
72

- Town
- Alternative B Centerline
- Alternative C Centerline
- Alternative B-1 Right-of-way
- Alternative B-2 Right-of-way
- Alternative C Right-of-way
- Almo Series
- Atwood Series
- Bude Series
- Chastain Series
- Collins Series
- Dulac Series
- Dulac-Wilcox Complex Series
- Falaya Series
- Falkner Series
- Gravel Pit
- Gullied Land
- Hatchie Series
- Iuka Series
- Mantachie Series
- Mixed Alluvial
- Ora Series
- Providence Series
- Ruston Series
- Ruston-Cuthbert Series
- Tickfaw Series
- Urbo Series
- Water
- Waverly and Bibb Series
- Wilcox-Cuthbert Series
- State Border

0 1,200 2,400 4,800 Feet

Exhibit 2
Soil Types in Project Corridors
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

The project area is within the North Independent Streams Basin. According to the Mississippi Department of Environmental Quality (MDEQ), the designated use of all of the project area streams is habitat for fish and wildlife. None of the streams in the project corridors are considered outstanding waters.

The named streams in the project area are Hurricane Creek, Big Creek, Dry Creek, Mix Branch, and Spicewood Creek. Additionally, there are unnamed tributaries to these streams and Muddy Creek.

*Hurricane Creek*

*Big Creek*

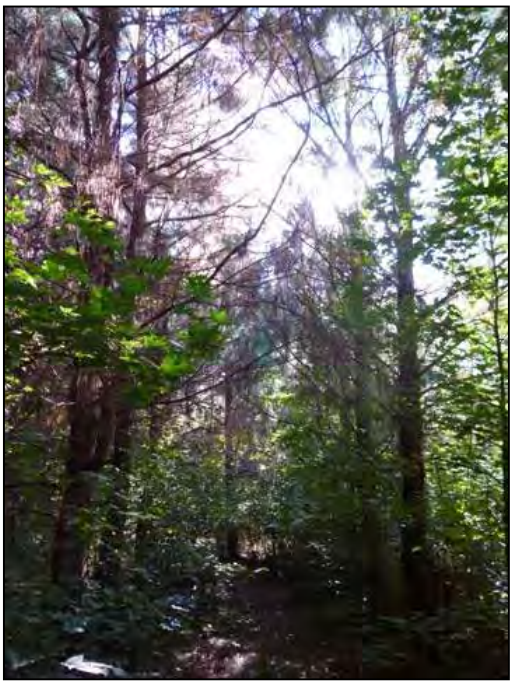
## III. TERRESTRIAL ECOLOGY

Most of the land in both Alternatives B (1 and 2) and C is forested. Valley bottoms are used for agriculture (hay, cotton, cattle), and a few residential areas are scattered throughout. Table 1, page 6, lists the acres of each land use for each alternative. Forest communities are characteristic of the oak-hickory, oak-pine, and loblolly-shortleaf forest-types that are recognized in northeast Mississippi (Rosson 2001). Forest community composition is not significantly different in either alternative location. Forests are crossed by numerous dirt and gravel roads and frequently have gullies, hill erosion, and stream headcutting as a result of past logging. Overall, the land use for both proposed alternatives is described as undeveloped forested slopes nearly equally mixed with agriculture fields, with some residential areas.

*Alternative C, gully erosion in forest*

Oak, hickory, and pine trees dominate forested hillsides and ridge tops in the project area. Mixed with shortleaf (*Pinus echinata*) and loblolly pine (*Pinus taeda*), the most common species of oak are white oak (*Quercus alba*), southern red oak (*Quercus falcata*), and post oak (*Quercus stellata*), with some black oak (*Quercus velutina*).

*Alternative C, large southern red oak in fenceline*



*Alternative C, pine forest with sweetgum saplings, boxelder, elm, privet, and false nettle*

*Alternative C, forest opening in pine forest*

TABLE 1 – TOTAL TERRESTRIAL ACRES POTENTIALLY IMPACTED*

| ALTERNATIVE | FORESTED | AGRICULTURE | RESIDENTIAL/ COMMERCIAL | OTHER** | TOTAL ACRES PER ALTERNATIVE |
|---|---|---|---|---|---|
| Alternative B-1 | 101 acres | 66 acres | 63 acres | 75 acres | 305 acres |
| Alternative B-2 | 121 acres | 91 acres | 71 acres | 144 acres | 397 acres |
| Alternative C | 201 acres | 152 acres | 70 acres | 136 acres | 559 acres |

*These acreage amounts were calculated based on right-of-way shown on aerial photographs, and are given for impact estimation/comparison purposes. Not all of the habitat amounts shown will actually be disturbed, since lands outside those needed for actual construction or work zones or for other reasons will not be cleared.

** This category includes existing roads, roadside habitats, old fields, ponds, marginal lands and any other land use types that were not considered cropland/pasture, forest, or residential/commercial.

The understory in these forests is dominated by black gum (*Nyssa sylvatica*) and sweetgum (*Liquidambar styraciflua*) with some sugar maple (*Acer saccharum*) saplings. Near the base of hill slopes and in stream valleys, red maple (*Acer rubrum*), sycamore (*Platanus occidentalis*), green ash (*Fraxinus pennsylvanica*), sweetgum, sassafras (*Sassafras albidum*), and winged elm (*Ulmus alata*) are more common. Herbaceous and vine layers within forests are consistently Christmas fern (*Polystichum acrostichoides*), poison ivy (*Toxicodendron radicans*), greenbrier (*Smilax* sp.), and muscadine grape (*Vitis rotundifolia*).

Throughout the forests pine plantations are common. On slopes dominated by loblolly pine and shortleaf pine the understory is nearly absent, with occurrences of hercules-club (*Zanthoxylum clava-herculis*), and American beautyberry (*Callicarpa Americana).* Ground cover is dominated by cat briar (*Vitis* sp.), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy, greenbriar, blackberry (*Rubus* sp.), and Japanese honeysuckle (*Lonicera japonica*).

*Alternative C, powerline in young pine forest*

Some agricultural fields have been abandoned and are in stages of early succession, being colonized by loblolly pine, sweetgum, and green ash. The herbaceous vegetation in these areas is dominated by goldenrods (*Solidago* sp.), panic grass (*Panicum* sp.), brome (*Bromus* sp.), yellow hop clover (*Trifolium campestre*), nightshade (*Solanum* sp.), aster (*Aster* sp.), and blackberry.

Kudzu (*Pueraria montana*) has become dominant in several areas within the project corridor, and where kudzu is established little native vegetation is able to thrive. Exotic Japanese honeysuckle (*Lonicera japonica*) was also common in the project corridor.

*Fenceline habitats*

*Kudzu*

*Alternative C, old field with goldenrod*

Both upland and old-field habitats in various stages of succession, and ponds and wetlands provide food, cover, and nesting opportunities for numerous small mammals, reptiles, native birds, spiders, and insects. Animals observed during the field effort include white tailed deer (*Odocoileus verginianus*), eastern grey squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), armadillo (*Dasypus* sp.), box turtle (*Terrapene carolina*), wild turkey (*Melaegris gallopavo*), turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), crow (*Corvus brachyrhynchos*), great blue heron (*Ardea herodias*), eastern cottontail (*Sylvilagus floridanus*), mockingbird (*Mimus plolyglottos*), American robin (*Turdus migratorius*), red-winged blackbird (*Agelaius pheoniceus*), woodchuck, (*marmota monax*), and mourning dove (*Zenaida macroura*). A list of species that are likely to occur within the project area based on existing habitats, vegetation, and species ranges is contained in Appendix A.

The agricultural and residential lands generally have limited wildlife value, as they are usually in crops or mowed, except for undisturbed vegetation along fencerows or boundaries.

*Cotton Field*

*A. Direct Impacts*

Alternative B-1 will impact approximately 101 acres of forested habitat. Alternative B-2 will impact approximately 121 acres of forested habitat. Alternative C will impact approximately 201 acres of forested habitat. Table 1 (page 4) is a summary of land use impacts for each alternative. There will be direct long-term adverse impacts when productive forests and

old-field areas are converted to roadway. Mortality of individual wildlife may occur both during construction and highway operation. If the population is experiencing other sources of stress, such as disease or habitat degradation, then traffic-related mortality can contribute to the demise of the population. Alternative C will divide forest blocks, leading to increased forest fragmentation. Forest fragmentation is a key cause of population loss of interior forest species such as warblers, tanagers, some woodpeckers, hawks, and owls. The increase in edge habitat that results from forest fragmentation increases habitat for some nest predators such as raccoons, chipmunks, and crows, which also leads to increased stress on interior forest species populations. Because Alternative B-1 closely follows the existing SR 15 alignment, forest fragmentation is reduced.

### *B. Indirect Impacts*

The plant communities found along Alternative B-1, B-2, and C serve as shelter, nesting, and foraging habitat for numerous species of wildlife. Loss of habitat initially displaces animals from the area, forcing them to concentrate into a smaller area, which causes over-utilization of the habitat. This loss ultimately lowers the carrying capacity of the remaining habitat and is manifested in some species as becoming more susceptible to disease, predation, and starvation.

Soil disturbance during roadway construction and the increase of edge habitat may create opportunity for the spread of invasive plant species, such as kudzu and Japanese honeysuckle. The establishment of these invasive plant species will reduce the native plant diversity and reduce wildlife habitat. The proposed project may encourage residential development along the new corridor, decreasing wildlife habitat and changing the current land use.

### *C. Cumulative Impacts*

Northeastern Mississippi is primarily rural, with forests and agricultural land use dominant in the project corridor and the surrounding area. While some change in land use near the new highway may be expected, the proposed project would not be expected to result in substantial new development of undisturbed land or the elimination of any habitat type from the landscape.

## V. AQUATIC ECOLOGY

### *A. Streams*

Streams known at this time to be potentially affected by the project alternatives are listed in Table 2 (page 10) and shown on Exhibits 3 through 8, pages 11 through 16. MDEQ and the U.S. Army Corps of Engineers (USACE) have not made waters of the State and/or waters of the U.S. determinations. All aquatic impacts identified as project development continues should be avoided, minimized, or mitigated to the extent possible, and incorporated into the permitting process.

TABLE 2 – POTENTIAL STREAM IMPACTS

| FEATURE*** | NAME | TYPE** | IMPACTING ALTERNATIVE | IMPACT LENGTH (FT)* | RBP SCORE |
|---|---|---|---|---|---|
| Stream 1 | UNT Muddy Creek | Ephemeral | C,(B) | 529 (444) | |
| Stream 2 | UNT Hurricane Creek | Ephemeral | C | 424 | N/A |
| Stream 3 | UNT Big Creek | Perennial | C | 694 | 124 |
| Stream 4 | Big Creek | Perennial | C | 1373 | 80 |
| Stream 5 | Mix Branch | Intermittent | C, (B) | 1040 (447) | 94 |
| Stream 6 | UNT Mix Branch | Intermittent | C, B | 525 | 76 |
| Stream 7 | UNT Cane Branch | Ephemeral | C, B | 362 | N/A |
| Stream 8 | Cane Branch | Perennial | C, B | 494 | 80 |
| Stream 9 | UNT Cane Branch | Intermittent | C, B | 201 | N/A |
| Stream 10 | UNT Cane Branch | Ephemeral | C, B | 424 | N/A |
| Stream 11 | Big Creek | Perennial | B | 169 | 69 |
| Stream 12 | Hurricane Creek | Perennial | C, (B) | 531, (166) | 95 |
| Stream 13 | UNT Hurricane Creek | Ephemeral | B | 172 | N/A |
| Field Ditch 1 | N/A | Ditch | C,(B) | 409 (274) | N/A |
| Field Ditch 2 | N/A | Ditch | C | 753 | N/A |
| Field Ditch 3 | N/A | Ditch | C | 378 | N/A |
| Field Ditch 4 | N/A | Ditch | C | 618 | N/A |
| Field Ditch 5 | N/A | Ditch | C | 1205 | N/A |
| Field Ditch 6 | N/A | Ditch | C | 380 | N/A |
| Field Ditch 7 | N/A | Ditch | C, B | 472 | N/A |
| Field Ditch 8 | N/A | Ditch | C, B | 529 | N/A |
| Field Ditch 9 | N/A | Ditch | B | 139 | N/A |

*Estimated.

**These watercourses may require determination, or confirmation of, their status as waters of the state by the Mississippi Division of Environmental Quality, and as perennial, intermittent or ephemeral streams or other waters of the U.S. by the U.S. Army Corps of Engineers. Features identified as man-made agricultural drainage ditches are included ("field ditch"), but will likely not be considered jurisdictional by resource agencies

***These streams were included because they occurred within right-of-way shown on aerial photographs, and are given for impact estimation/comparison purposes. Not all of the streams shown will actually be disturbed, since lands outside those needed for actual construction or work zones will not be cleared.

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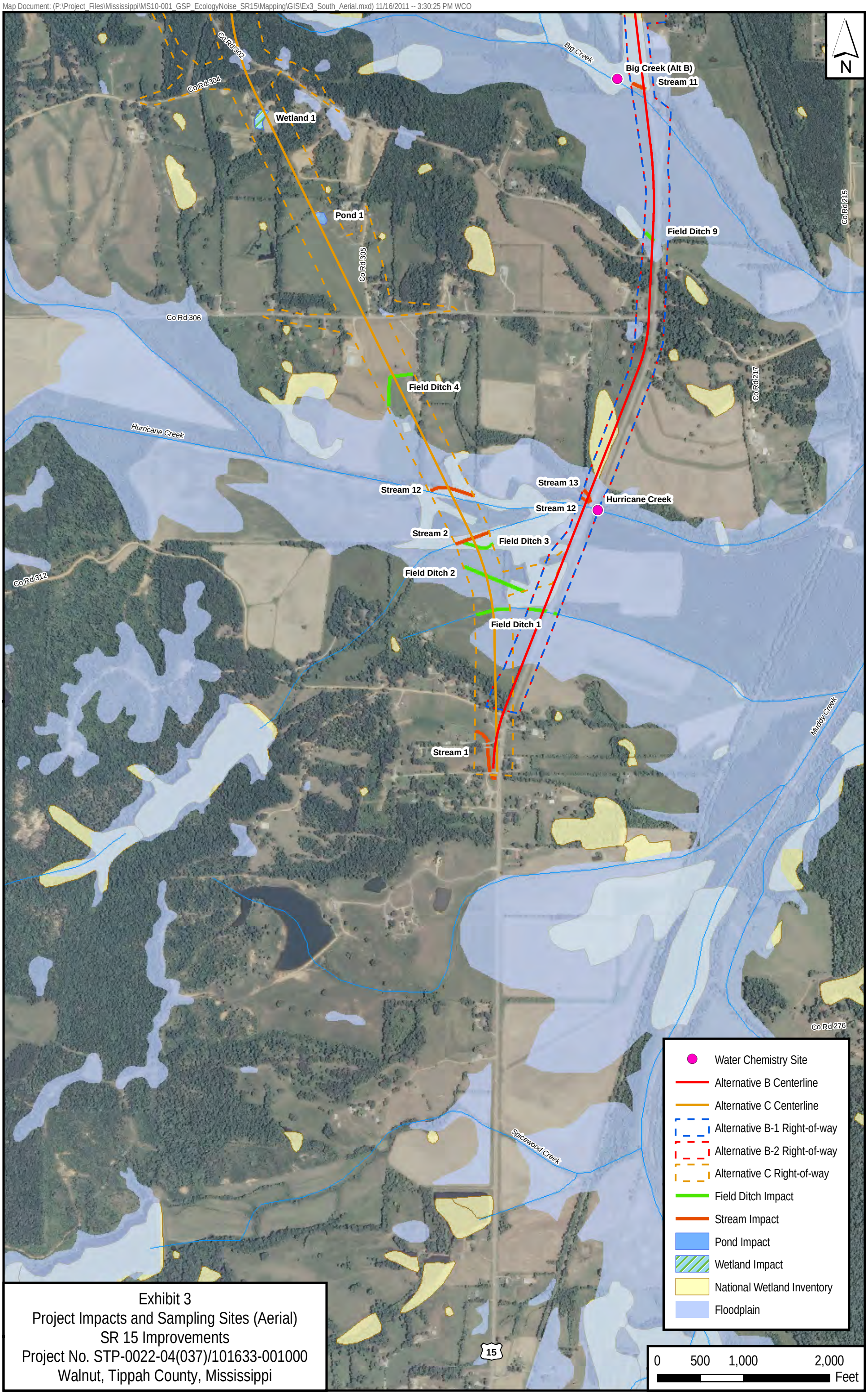


Exhibit 3
Project Impacts and Sampling Sites (Aerial)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

Map Document: (P:\Project_Files\Mississippi\MS10-001_GSP_EcologyNoise_SR15\Mapping\GIS\Ex4_South_Topo.mxd) 2/20/2012 -- 1:36:50 PM CB

N

Big Creek (Alt B)
Stream 11
Wetland 1
Pond 1
Field Ditch 9
Field Ditch 4
Stream 12
Stream 13
Hurricane Creek
Stream 12
Stream 2
Field Ditch 3
Field Ditch 2
Field Ditch 1
Stream 1

Co Rd 302
Co Rd 304
Co Rd 305
Co Rd 306
Co Rd 312
Co Rd 215
Co Rd 217
Co Rd 276
Big Creek
Hurricane Creek
Muddy Creek
Spicewood Creek
Spicewood Creek
Hopkins Cem
Sandpits
BR 423
BR 421
BR 423
BR 428
GULF CENTRAL
15

Water Chemistry Site
Alternative B Centerline
Alternative C Centerline
Alternative B-1 Right-of-way
Alternative B-2 Right-of-way
Alternative C Right-of-way
Field Ditch Impact
Stream Impact
Pond Impact
Wetland Impact
National Wetland Inventory
Floodplain

0 500 1,000 2,000 Feet

Exhibit 4
Project Impacts and Sampling Sites (Topographic)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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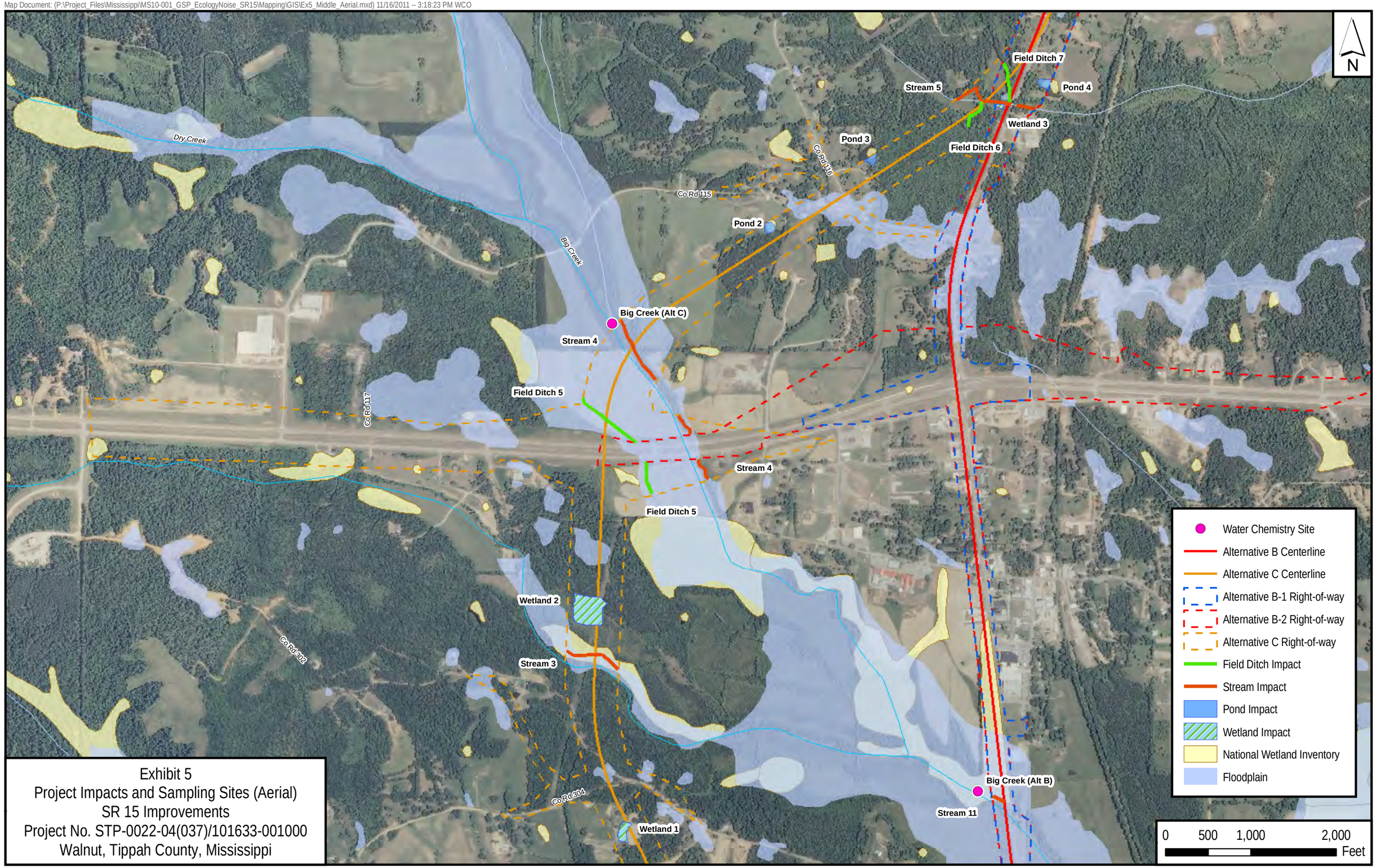


Exhibit 5
Project Impacts and Sampling Sites (Aerial)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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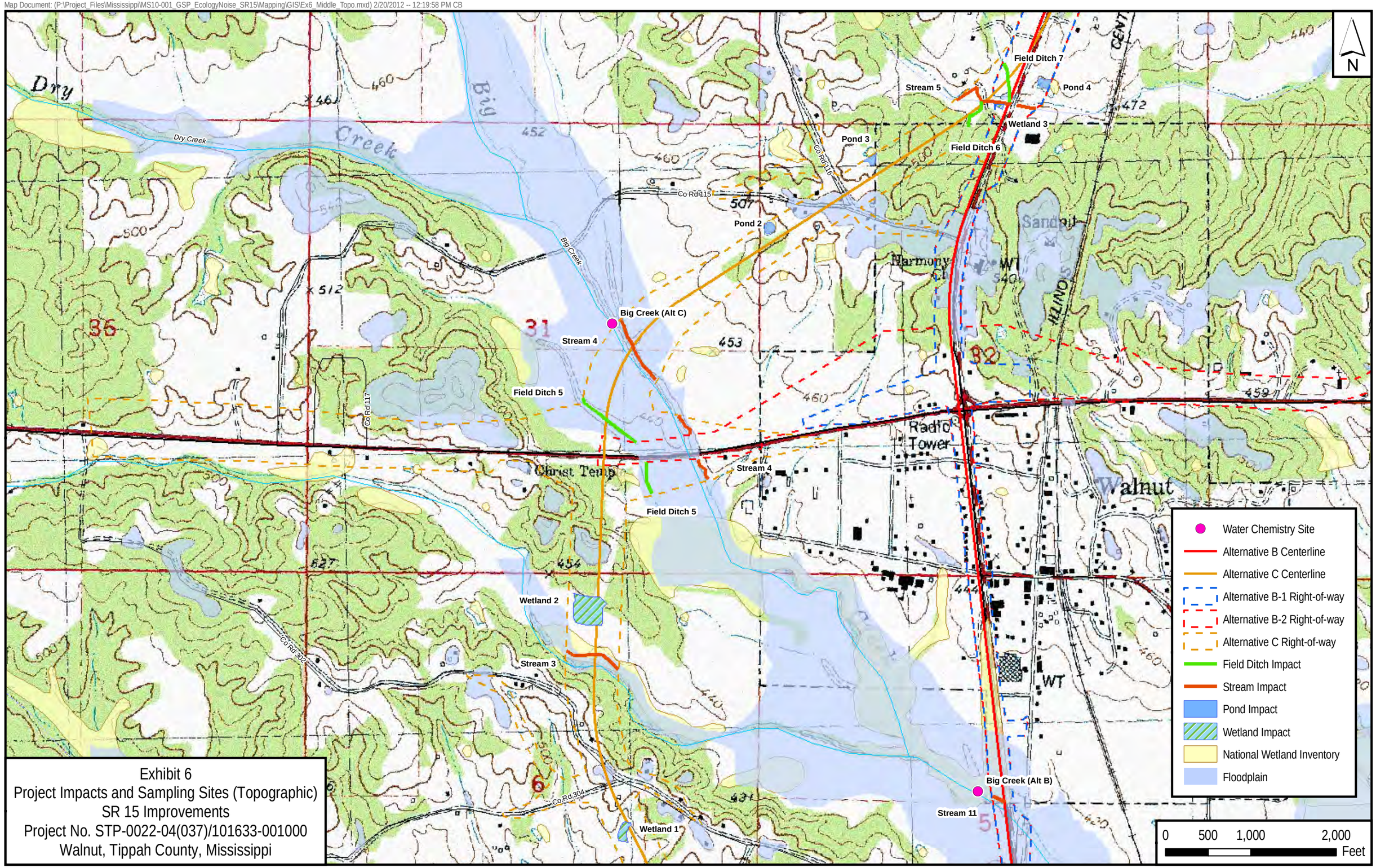


Exhibit 6
Project Impacts and Sampling Sites (Topographic)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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EE

IPPI

15

N

Co Rd 120

Stream 10

Co Rd 126

Co Rd 125

Co Rd 102

Stream 9

Cane Branch

Stream 8

Pond 7

Stream 7

Field Ditch 8

Co Rd 119

Co Rd 118

Stream 6

Co Rd 123

Co Rd 124

Pond 6

Pond 5

Field Ditch 7

Pond 4

Field Ditch 6

Stream 5

Wetland 3

Pond 3

Co Rd 116

Co Rd 115

Water Chemistry Site
Alternative B Centerline
Alternative C Centerline
Alternative B-1 Right-of-way
Alternative B-2 Right-of-way
Alternative C Right-of-way
Field Ditch Impact
Stream Impact
Pond Impact
Wetland Impact
National Wetland Inventory
Floodplain
State Border

0 500 1,000 2,000
Feet

Exhibit 7
Project Impacts and Sampling Sites (Aerial)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

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EE

IPPI

N

HARDEMAN CO

TIPPAH CO

LINE

Hersey

Brownfield

Co Rd 120

Co Rd 126

Co Rd 125

Stream 10

BM 460

BM 442

Cane Branch

Co Rd 102

Stream 9

Stream 8

Pond 7

Stream 7

Field Ditch 8

Co Rd 119

Co Rd 123

Stream 6

Co Rd 124

Pond 6

Pond 5

Co Rd 118

Field Ditch 7

Pond 4

Field Ditch 6

Stream 5

Wetland 3

Pond 3

Co Rd 116

Co Rd 115

Water Chemistry Site
Alternative B Centerline
Alternative C Centerline
Alternative B-1 Right-of-way
Alternative B-2 Right-of-way
Alternative C Right-of-way
Field Ditch Impact
Stream Impact
Pond Impact
Wetland Impact
National Wetland Inventory
Floodplain
State Border

0 500 1,000 2,000 Feet

Exhibit 8
Project Impacts and Sampling Sites (Topographic)
SR 15 Improvements
Project No. STP-0022-04(037)/101633-001000
Walnut, Tippah County, Mississippi

Streams were examined during field surveys and their locations were recorded with GPS. Each stream was photographed and assessed using the visual based *Habitat Assessment Field Data Sheet* (RBP) from EPA's *Rapid Bioassessment Protocols For Use in Streams and Rivers.* Stream width, channel depth, and type (perennial, intermittent, or ephemeral) were also determined at that time and recorded on the RBP form. RBP forms and photos of each stream are located in Appendix B.

The larger streams located in valleys have perennial flow. Smaller tributaries within the project area are either intermittent or ephemeral in nature. All stream types have predominantly sand and silt substrates and deeply entrenched channels. Bank erosion is common and pools are shallow due to excess sediment. The RBP scores reflect the condition of the streams by low scores in categories such as Available Epifaunal Substrate, Embeddedness, Velocity/Depth Regime, and Frequency of Riffles. The highest RBP scores were in Channel Alteration, Bank Stability, and Bank Vegetative Protection, reflecting the forested nature of most stream locations. RBP data sheets are included in Appendix B; RBP total scores are presented in Table 2, page 10 above.

Water chemistry readings were taken on October 18, 2011 at four locations. The locations were selected to represent the water quality throughout the project area by sampling at locations at or downstream of the project corridor in most of the drainages (Exhibits 3 through 8, pages 11 through 16). Results of this sampling are presented in Table 3 below. These results do not indicate abnormal or highly polluted conditions.

TABLE 3 – WATER CHEMISTRY

| STATION | TEMPERATURE (°C) | pH (SU) | SPECIFIC CONDUCTANCE (μMHOS) | DISSOLVED OXYGEN (MG/L) |
|---|---|---|---|---|
| Big Creek (Alt B) | 16.35 | 7.37 | 79 | 6.58 |
| Hurricane Creek | 16.72 | 7.59 | 55 | 7.03 |
| Stream 9 (Cane Branch) | 16.94 | 7.41 | 465 | 6.74 |
| Big Creek (Alt C) | 83.6 | 7.85 | 242.3 | 10.19 |

*1. Direct Impacts*

Alternatives B-1 and B-2, which have the same stream impacts, will impact 5,895 feet of stream (2,896 feet perennial, 1,173 feet intermittent, and 1,826 feet ephemeral). Alternative C will impact 6,597 feet of stream (3,092 feet perennial, 1,766 feet intermittent, and 1,739 feet ephemeral). It is difficult to determine the exact impact type at these sites with present design information; it appears that many of the channels will be crossed. Mortality of individual fish and aquatic wildlife may occur during construction. Sediments that are added to the stream during construction can bury fish nesting areas and niches that provide habitat for aquatic insects. Crossing streams using culverts or bridges can reduce stream sinuosity, thereby reducing stream length and available habitat. Stream impacts associated with Alternatives B-1 and B-2 will be at existing stream crossings; therefore, no new stream impact locations will be created with the selection of either of the Alternative B alignments. Unlike Alternative C, which will include crossings at locations that are currently not directly impacted by roadway crossings.

*2. Indirect Impacts*

The implementation of either Alternative B (1 and 2) or C could cause some sedimentation impacts to sites downstream; good erosion and sediment control should be designed and implemented to minimize these impacts. Improperly placed and/or sized pipes and box culverts can lead to scouring or sediment deposition upstream and downstream of the crossing. This can lead to erosion and deposition that impairs the stream throughout its length. Plunge pools that develop downstream of culverts can create fish migration barriers.

*3. Cumulative Impacts*

Culverting, sediment impacts, and the addition of impervious surfaces all tend to degrade overall quality of aquatic habitats and water quality. The placement of stream sections in culverts is a permanent impact. Increases in numbers of culverts associated with highways, private driveways, and future development may cumulatively reduce available habitats over time.

*4. Permit Requirements*

Activities that result in the discharge of dredged or fill material into waters of the U.S. typically require a Section 404 permit from USACE. Prior to the issuance of a Section 404 permit, the applicant must obtain a Section 401 Water Quality Certification (401 certification) from the state in which the discharge originates. The purpose of 401 certification is to verify that the proposed activity will not result in the violation of the water quality standards of the State. In the State of Mississippi, MDEQ is responsible for the 401 certification review.

Impacts to streams should be avoided whenever possible. Unavoidable impacts to streams should be minimized, and may require compensatory mitigation in the form of replacement, enhancement, providing a substitute resource (stream restoration), or payment of an in-lieu mitigation fee.

*B. Wetlands and Ponds*

Wetlands and ponds which are known at this time to be potentially affected by the project alternatives are listed in Tables 4 and 5, respectively (page 19) of this report, and are shown on Exhibits 3 through 8, pages 11 through 16. The determinations as to which are waters of the State and/or of the U.S. have not been made by MDEQ and the USACE. All aquatic impacts identified as project development continues should be avoided or minimized to the extent possible, and incorporated into the permitting. Mitigation may be required for unavoidable impacts.

TABLE 4 – POTENTIAL WETLAND IMPACTS

| FEATURE | WETLAND CLASS | IMPACTING ALTERNATIVE | WETLAND SIZE (ACRES) | NOTES |
|---|---|---|---|---|
| Wetland 1 | Emergent | C | 0.51 | *Isolated, possibly not jurisdictional. Marginal soil and hydrology indicators; needs confirmation of wetland status. |
| Wetland 2 | Emergent | C | 2.61 | Soil and hydrology indicators are weak. Boundaries estimated - need delineation and confirmation of status. |
| Wetland 3 | Emergent | C, B | 0.07 | *Isolated, possibly not jurisdictional. |

*Isolated or contiguous designation may influence the jurisdictional status and the type of State or Federal permits required. Designations are unconfirmed by permitting agencies at this time.

TABLE 5 – POTENTIAL POND IMPACTS

| FEATURE | IMPACTING ALTERNATIVE | POND SIZE (ACRES) |
|---|---|---|
| Pond 1 | C | 0.31 |
| Pond 2 | C | 0.3 |
| Pond 3 | C | 0.22 |
| Pond 4 | C, B | 0.31 |
| Pond 5 | C, B | 0.2 |
| Pond 6 | C, B | 0.25 |
| Pond 7 | C, B | 0.49 |

Wetlands were examined during field surveys, and their location and boundaries were recorded with GPS. Each wetland was photographed and delineated using procedures outlined in the USACE *Wetland Delineation Manual* (1987). Wetland type (emergent, shrub-scrub, or forested) was also determined at that time and is included on the *Wetland Determination Field Data Sheets*. *Wetland Determination Field Data Sheets* and photos of each wetland and pond are located in Appendix B.

Three small wetlands were identified. These wetlands were dominated by herbaceous species and are described as wet meadows. The indicators for hydrology and hydric soils were weakly detected in all three wetlands. Oxidized rhizospheres on living roots were the only primary indicator of wetland hydrology. A depleted matrix was the hydric soil indicator at these wetlands. The matrix was commonly 10YR 5/2, but was very close to 10YR 5/3. The dominant vegetation in each wetland is included in the *Wetland Determination Field Data Sheets* located in Appendix B. Additional field visits to these wetlands during the early growing season may add supporting evidence for determining the wetland status of these areas.

The primary function of wetlands in the project area is wildlife habitat. These wetlands provide a water source for terrestrial wildlife as well as habitat for aquatic species of flora and fauna. Because wetland habitat is uncommon in the landscape of the project area, these wetlands are important habitats for aquatic plants and animals, as well as for diversity. In addition to these functions, wetlands that are located near agricultural fields may serve as nutrient and sediment filters for water before it enters streams.

*1. Direct Impacts*

Alternatives B-1 and B-2 may impact 0.07 acres of emergent wetland and 1.25 acres of pond (4 ponds). Alternative C may impact 3.19 acres of emergent wetland and 2.08 acres of pond (7 ponds). It is difficult to determine the exact impact type at these sites with present information; it appears that the wetlands will be filled and crossed. Mortality of individual aquatic wildlife may occur during construction. The loss of wetland habitat in the landscape will be permanent. Efforts should be made, however, during the continued design process, to avoid or minimize impacts as much as possible.

*2. Indirect Impacts*

Wetlands that are partially, but not completely, filled by the proposed project may be affected by modified drainage patterns, which could result in localized changes in water levels and vegetation patterns. Efforts should be made to minimize these impacts.

*3. Cumulative Impacts*

Increases in development due to the access the new roadway provides may cumulatively reduce available wetland habitats over time.

*4. Permit Requirements*

Activities that result in the discharge of dredged or fill material into waters of the U.S., including wetlands, typically require a Section 404 permit from the USACE. Prior to the issuance of a Section 404 permit, the applicant must obtain a Section 401 Water Quality Certification (401 certification) from the state in which the discharge originates. The purpose of a 401 certification is to verify that the proposed activity would not result in the violation of the water quality standards of the state. In the State of Mississippi, MDEQ is responsible for the 401 certification review.

Impacts to wetlands should be avoided whenever possible. Unavoidable impacts to wetlands should be minimized, and may require compensatory mitigation in the form of

replacement, enhancement, providing a substitute resource (wetland restoration), or payment of an in-lieu mitigation fee.

### *C. Floodplains*

Floodplains, digitized from Federal Emergency Management (FEMA) Zone A areas, which are approximate flood hazard areas subject to inundation by the 100-year flood, are shown on Exhibits 2 through 9, pages 9 through 16. Ecological values associated with the floodplain of streams in the project area, particularly those indicated on Big Creek, Hurricane Creek, and Tributaries to the Muddy River, are nutrient retention, floodwater storage, groundwater recharge, and aquatic and terrestrial habitats. Floodplains provide feeding and breeding areas for many invertebrates that are important to the food chain in streams and terrestrial habitats. Impacts to floodplains in the project area should be avoided or minimized by crossing the floodplain at a near-perpendicular angle, with appropriately sized bridges; or placing a parallel highway alignment out of the floodplain or as far away from the stream as possible.

#### *1. Permit Requirements*

FEMA requires that any project in a floodway must be reviewed to determine if the project will increase flood elevations. An engineering analysis must be conducted before a permit can be issued. This No-rise Certification must be supported by technical data and signed by a registered professional engineer. The supporting technical data should be based on the standard step-backwater computer model used to develop the 100-year floodway shown on the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM) (FEMA 2008).

## VI. ENDANGERED AND THREATENED SPECIES

The U.S. Fish and Wildlife Service (USFWS) Mississippi Ecological Services Field Office lists threatened and endangered species by county. No species are listed for Tippah County. Additionally, a coordination response letter from USFWS, dated October 14, 2011, resulted in no federally listed endangered, threatened or candidate species finding for the project area. A letter dated October 4, 2011 from the Mississippi Natural Heritage Program (MNHP) reports the occurrences of two species of concern within 2 miles of the proposed project corridor, the steelcolor shiner (*Cyprinella whipplei)*, and the ridge-stem false foxglove (*Agalinia oligophylla*). The MNHP letter concludes that if Best Management Practices (BMPs) are properly implemented, monitored, and maintained, the proposed project likely poses no threat to listed species or their habitats. No Critical Habitat for any species occurs in the project area or in Tippah County. The USFWS and MNHP letters are included in Appendix C.

### *A. Steelcolor Shiner*

The steelcolor shiner is a small (12 to 16 centimeter) insectivorous fish that is known from the Mississippi River basin from Ohio and West Virginia to Illinois, Missouri and eastern Oklahoma, and south to northern Alabama and northern Louisiana (www.fishbase.org). Spawning occurs in late spring and summer, starting during the second or third summer of its up-to-4-year life span (NatureServe 2008). The steelcolor shiner spawns around logs, brush, and other obstructions, usually near riffles, attaching eggs to the undersides of obstructions or placed above the bottom under loose bark, in crevices or furrows on logs, or among tree roots; males maintain territories around spawning surfaces (NatureServe 2008).

Habitat for the steelcolor shiner includes runs, pools, and backwaters of warm, moderate to somewhat low-gradient large creeks and medium to large rivers that typically are clear; it also tolerates streams that generally are turbid or have silt bottoms (NatureServe 2011).

Impoundments have been the biggest threat to the sheelcolor shiner (NatureServe 2011). Habitat for the steelcolor shiner in the project area exists in the larger streams: Hurricane Creek and Big Creek. The Mississippi Natural Heritage Program recommends that BMPs be implemented and monitored for compliance, specifically measures that will prevent any suspended silt and contaminants from leaving the site in stormwater run-off, as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies.

### *B. Ridge-stem False Foxglove*

The ridge-stem false foxglove is an herbaceous annual in the figwort family that grows to 3 to 6 feet tall. It has pink blooms in July, August, and September (wildflower.org). This species is locally abundant in southwestern Louisiana and easternmost Texas, but is also known from Mississippi, Alabama, and Tennessee (natureserve.org). Records of the species are from ten counties in Mississippi, including Tippah County. Habitat requirements for this species include sunny locations of average moisture, including prairies, roadsides, fields, and woods, and can be determined from the more common gerardia (*Agalinis tenuifolia*) by its yellowish green stems, leaves that are somewhat linear to spatulate, and flowers that lock a yellow-lined throat (Timme 2007).

### *C. Direct and Indirect Impacts*

No protected species records are known within the likely direct impact zone of the project.

One aquatic species, the steelcolor shiner, and one terrestrial plant, the ridge-stem false foxglove, both species of concern, are recorded within two miles of the project area. Habitat for these species is present within the project impact area of both Alternatives B-1, B-2, and C. Sedimentation of Hurricane Creek, Big Creek, or their tributaries could affect steelcolor shiner habitat during project construction. The use of BMPs can prevent direct impacts to the steelcolor shiner. Improper placement of culverts and bridges over streams may lead to indirect impacts of the steelcolor shiner if they create migration barriers or stream impairments that lead to increased sedimentation.

### *D. Cumulative Impacts*

Increases in development due to the access the new roadway provides may cumulatively reduce available habitats for ridge-stem false foxglove and the steelcolor shiner over time.

## VII. SUMMARY OF FINDINGS

Alternative B-1 will impact 20 fewer acres of forested habitat than Alternative B-2 and 98 fewer acres of forested habitat than Alternative C. Alternatives B-1 and B-2 will impact 3.12 fewer acres of wetland than Alternative C. Alternatives B-1 and B-2 will result in 702 fewer feet of stream impacts and 0.83 fewer acres of pond impacts than Alternative C. The potential to impact the state listed ridge-stem false foxglove and the steelcolor shiner, state listed species of concern, is similar for each alternative.

Alternative B-1 is considered to have the least overall ecological impact. It will impact a lesser amount of forest, wetland, and stream habitat, and because it follows the existing roadway will require less forest fragmentation. Alternative B-1 stream crossings will be located at/near existing crossing locations, and therefore no additional culverts, pipes, or bridges will be introduced to the area streams. Table 6, page 25, summarizes the ecological concerns for each alternative.

TABLE 6 – SUMMARY OF ECOLOGICAL IMPACTS

| | ALTERNATIVE B-1 | Alternative B-2 | ALTERNATIVE C |
|---|---|---|---|
| Terrestrial Habitat | 305 acres total | 397 acres total | 559 acres total |
| Forest | 101 acres | 121 acres | 201 acres |
| Agriculture | 66 acres | 91 acres | 152 acres |
| Residential | 63 acres | 71 acres | 70 acres |
| Other | 75 acres | 114 acres | 136 acres |
| Stream Impacts | 5,895 feet total | 5,859 feet total | 6,597 feet total |
| Perennial | 2,896 feet | 2,896 feet | 2,896 feet |
| Intermittent | 1,173 feet | 1,173 feet | 1,173 feet |
| Ephemeral | 1,826 feet | 1,826 feet | 1,981 feet |
| Wetland Impacts | 0.07 acres total | 0.07 acres total | 3.19 acres total |
| Ponds | 1.25 acres (4 ponds) | 1.25 acres (4 ponds) | 2.08 acres (7 ponds) |
| FEMA Floodplains | 3 (Big Creek, Hurricane Creek, Tributaries of Muddy Creek) | 3 (Big Creek, Hurricane Creek, Tributaries of Muddy Creek) | 3 (Big Creek, Hurricane Creek, Tributaries of Muddy Creek) |
| Potential Listed Species Occurrence | Ridge-stem false foxglove, steelcolor shiner | Ridge-stem false foxglove, steelcolor shiner | Ridge-stem false foxglove, steelcolor shiner |

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# APPENDICES

# APPENDIX A – FAUNA LIKELY TO OCCUR WITHIN PROJECT AREA

# FAUNA LIKELY TO OCCUR IN THE PROJECT AREA

*American Crow (Corvus brachyrhynchos)
*American Robin (Turdus migratorius)
*Eastern Box Turtle (Terrapene carolina)
*Eastern Cottontail (Sylvilagus floridanus)
*Great Blue Heron (Ardea herodias)
*Grey Squirrel (Sciurus carolinensis)
*Mourning Dove (Zenaida macroura)
*Nine-banded Armadillo (Dasypus novemcinetus)
*Northern Mockingbird (Mimus plolyglottos)
*Raccoon (Procyon lotor)
*Red-tailed Hawk (Buteo jamaicensis)
*Red-winged Blackbird (Agelaius phoeniceus)
*Snapping Turtle (Chelydra serpentina)
*Turkey Vulture (Cathartes aura)
*White-tailed Deer (Odocoileus verginianus)
*Wild Turkey (Melaegris gallopavo)
*Woodchuck (Marmota monax)
American Goldfinch (Carduelis tristis)
American Toad (Bufo americanus)
Barn Swallow (Hirundo rustica)
Barred Owl (Strix varia)
Beaver (Castor canadensis)
Big Brown Bat (Eptesicus fuscus)
Black Vulture (Coragyps atratus)
Black-and-white Warbler (Mniotilta varia)
Blue Jay (Cyanocitta cristata)
Broad-headed Skink (Eumeces laticeps)
Brown Snake (Storeria dekayi)
Brown Thrasher (Toxostoma rufum)
Brown-headed Cowbird (Molothrus ater)
Bullfrog (Rana catesbeina)
Carolina Chickadee (Parus carolinensis)
Carolina Wren (Thryothorus laudovicianus)
Chorus Frog (Pseudacris triseriata)
Chuck-wills Widow (Caprimulgus carolinensis)
Common Garter Snake (Thamnophis sirtalis)
Common Grackle (Quiscalus quiscula)
Common Nighthawk (Chordeiles minor)
Common Yellow-throat (Geothlypis trichas)
Copperhead (Agkistrodon contortrix)
Coyote (Canis latrans)
Dark-eyed Junco (Junco hyemalis)
Dickcissel (Spiza americana)
Downy Woodpecker (Picoides pubescens)
Dusky Salamander (Desmognathus fascus)

Eastern Bluebird (Sialia sialis)
Eastern Chipmunk (Tamias striatus)
Eastern Fence Lizard (Sceloporus undulates)
Eastern Harvest Mouse (Reithvodontomys numulis)
Eastern Hognose Snake (Heterodon platyrhinos)
Eastern Kingbird (Tyrannus tyrannus)
Eastern Meadowlark (Sturnella magna)
Eastern Mole (Scalopus aquaticus)
Eastern Narrow-mouthed Frog (Gastrophyryne carolinensis)
Eastern Newt (Notophthalmus viridescens)
Eastern Phoebe (Sayornis phoebe)
Eastern Pipestrelle (Pipistrellus sublavus)
Eastern Screech Owl (Otus asio)
Eastern Spadefoot (Scaphiopus holbrooki)
Eastern Spotted Skunk (Spilogale putorius)
Eastern Wood Pewee (Contopus virens)
European Starling (Sturnus vulgaris)
Evening Bat (Nycticeius humeralis)
Five-lined Skink (Eumeces fasciatus)
Fox Squirrel (Sciurus niger)
Gray Fox (Urocyon cinereoagenteus)
Great Horned Owl (Bubo virginianus)
Great-crested Flycatcher (Myiarchus crinitus)
Green Anole (Anolis carolinensis)
Green Frog (Rana clamitans)
Green Heron (Butorides striatus)
Ground Skink (Scincella lateralis)
Hispid Cotton Rat (Sigmodon hispidus)
Hoary Bat (Lasiurus cinereus)
Hooded Warbler (Wilsonia citrine)
House Mouse (Mus musculus)
House Sparrow  (Passer deomesticus)
Indigo Bunting (Passerina cyanea)
Kentucky Warbler (Oporornis formosus)
Least Shrew (Cryptotis parva)
Little Brown Bat (Myotis lucifugus)
Long-tailed Weasel (Mustela frenata)
Marbled Salamander (Ambystoma opacum)
Milk Snake (Lampropeltis triangulum)
Mink (Mustela vison)
Mud Turtle (Kinosternon subrubrum)
Muskrat (Odantra zibethicus)
Northern Bobwhite (Colinus virginianus)
Northern Cardinal (Cardinalis cardinalis)
Northern Cricket Frog (Acris crepitans)
Northern Flicker (Colaptes aruatus)
Northern Harrier (Circus cyaneus)
Northern Oriole (Icterus galbula)

Northern Parula (Parula americana)
Northern Water Snake (Nerodia sipedon)
Norway Rat (Rattus norvegicus)
Orchard Oriole (Icterus spurious)
Painted Turtle (Chrysemys picta)
Pigmy Rattlesnake (Sistrurus miliarius)
Pileated Woodpecker (Dryocopus pileatus)
Pine Siskin (Carduelis pinus)
Pine Warbler (Dendroica pinus)
Pine-gopher Snake (Pituophis melanoleucus)
Pond Slider (Chrysemys scripta)
Prairie Vole (Microtus ochragaster)
Prothonotary Warbler (Protonotaria citrea)
Purple Martin (Progne subis)
Rafinesque's Big-eared Bat (Plecotus rafinesquii)
Rat Snake (Elaphe obsolete)
Red Bat (Lasiurus borealis)
Red Fox (Vulpes vulpes)
Red-bellied Snake (Storeria occipitomaculata)
Red-bellied Woodpecker (Melanerpes carolinus)
Red-eyed Vireo (Vireo olivaceus)
Red-headed Woodpecker (Melanerpes erythrocephalus)
Ringneck Snake (Diadophis punctatus)
Rough Green Snake (Opheodrys aestivus)
Ruby-throated Hummingbird (Archilochus colubris)
Scarlet Snake (Cemphora coccinea)
Silver-haired Bat (Lasionycteris noctivagans)
Sinkpot (Sternotherus odoratus)
Slimy Salamander (Plethodon glutinosus)
Small-mouthed Salamander (Ambystoma texanum)
Song Sparrow (Melospiza melodia)
Southeastern Crowned Snake (Tantilla coronata)
Southeastern Five-lined Skink (Eumeces inexpectatus)
Southeastern Shrew (Sorex longirostris)
Southern Flying Squirrel (Glaucomys volans)
Southern Leopard Frog (Rana sphenoaphala)
Spiny Softshell (Trionyx spiniferus)
Spotted Salamander (Ambystoma maculatum)
Spring Peeper (Hyla crucifer)
Striped Skunk (Mephitis mephitis)
Summer Tanager (Piranga rubra)
Timber Rattlesnake (Crotalus borridus)
Tufted Titmouse (Parus bicolor)
Two-lined Salamander (Eurycea bislineata)
Virginia Opossum (Didephis virginiana)
White-eyed Vireo (Vireo griseus)
White-footed Mouse (Peromyscus leucopus)
White-throated Sparrow (Zonotrichia albicollis)

Wood Thrush (Hylocichla mustelina)
Yellow Breasted Chat (Icteria virens)
Yellow Warbler (Dendroica petechia)
Yellow-bellied Sapsucker (Sphyrapicus varius)
Yellow-billed Cuckoo (Coccyzus americanus)
Yellow-rumped Warbler (Dendroica coronata)
Alabama waterdog (Necturus alabamensis)
Tiger salamander (Ambystoma tigrinum)

*Species observed in project area during fieldwork.
Note: Data obtained from species range maps (Behler 1997, Robbins 1983, All About Birds 2008, Whitaker 1980).

# APPENDIX B – RBP FORMS AND ROUTINE WETLAND FIELD DETERMINATION SHEETS AND PHOTO JOURNAL

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: Dry Creek | LOCATION: Stream 3 |
| STREAM WDTH (FT): 10 DEPTH (FT): 2 | PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: |
| | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | |
|---|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor | |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. | |
| SCORE: 10 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. | |
| SCORE: 12 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). | |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. | |
| SCORE: 11 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. | |
| SCORE: 13 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 | |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2 – Dry Creek

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | | |
| SCORE: 17 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | | |
| SCORE: 10 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | | |
| SCORE: 8 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 8 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | | |
| SCORE: 6 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 6 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | | |
| SCORE: 10 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 10 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |

TOTAL SCORE: 124

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: Big Creek | LOCATION: Stream 4 |
| STREAM WDTH (FT): 25 DEPTH (FT): 25 | PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |

| | | |
|---|---|---|
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category: Optimal | Suboptimal | Marginal | Poor |
|---|---|---|---|---|
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| SCORE: 8 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 **8** 7 6 | 5 4 3 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| SCORE: 4 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 **4** 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). |
| SCORE: 9 | 20 19 18 17 16 | 15 14 13 12 11 | 10 **9** 8 7 6 | 5 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE: 4 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 **4** 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| SCORE: 13 | 20 19 18 17 16 | 15 14 **13** 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2 – Big Creek

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | |
| SCORE: 6 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | |
| SCORE: 7 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | |
| SCORE: 8 (LB) | Left Bank | | 10 | | 9 | 8 | | | 7 | 6 | 5 | | | 4 | 3 | 2 | | | 1 | 0 | | |
| SCORE: 9 (RB) | Right Bank | | 10 | | 9 | 8 | | | 7 | 6 | 5 | | | 4 | 3 | 2 | | | 1 | 0 | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | |
| SCORE: 5 (LB) | Left Bank | | 10 | | 9 | 8 | | | 7 | 6 | 5 | | | 4 | 3 | 2 | | | 1 | 0 | | |
| SCORE: 5 (RB) | Right Bank | | 10 | | 9 | 8 | | | 7 | 6 | 5 | | | 4 | 3 | 2 | | | 1 | 0 | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | |
| SCORE: 1 (LB) | Left Bank | | 10 | | 9 | 8 | | | 7 | 6 | 5 | | | 4 | 3 | 2 | | | 1 | 0 | | |
| SCORE: 1 (RB) | Right Bank | | 10 | | 9 | 8 | | | 7 | 6 | 5 | | | 4 | 3 | 2 | | | 1 | 0 | | |

TOTAL SCORE: 80

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: Mix Branch | LOCATION: Stream 5 |
| STREAM WDTH (FT): 10-15 DEPTH (FT): 3-4 | PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: |
| | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category: Optimal | Suboptimal | Marginal | Poor |
|---|---|---|---|---|
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| SCORE: 3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 **3** 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| SCORE: 9 | 20 19 18 17 16 | 15 14 13 12 11 | 10 **9** 8 7 6 | 5 4 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). |
| SCORE: 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | **5** 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE: 9 | 20 19 18 17 16 | 15 14 13 12 11 | 10 **9** 8 7 6 | 5 4 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| SCORE: 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | **5** 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2, Mix Branch

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | |
| SCORE: 16 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | |
| SCORE: 7 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | |
| SCORE: 8 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 8 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | |
| SCORE: 6 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 6 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | |
| SCORE: 6 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 6 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |

TOTAL SCORE: 94

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: UNT Mix Branch | LOCATION: Stream 6 |
| STREAM WDTH (FT): 1.5-4.5 DEPTH (FT): 0.5-1.5 | PERENNIAL ☐ INTERMITTENT ☒ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: |
| | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | |
|---|---|---|---|---|
| | Optimal | Suboptimal | Marginal | Poor |
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| SCORE: 2 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 **2** 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| SCORE: 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | **5** 4 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). |
| SCORE: 3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 **3** 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE: 11 | 20 19 18 17 16 | 15 14 13 12 **11** | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| SCORE: 2 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 **2** 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2, UNT Mix Branch

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | |
| SCORE: 16 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | |
| SCORE: 3 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | |
| SCORE: 7 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 7 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | |
| SCORE: 6 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 6 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | |
| SCORE: 4 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 4 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |

TOTAL SCORE: 76

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: UNT Muddy Creek | LOCATION: Stream 8 |
| STREAM WDTH (FT): 10-12 DEPTH (FT): 3 | PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: |
| | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category: Optimal | Suboptimal | Marginal | Poor |
|---|---|---|---|---|
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 **7** 6 | 5 4 3 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| SCORE: 6 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 **6** | 5 4 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). |
| SCORE: 6 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 **6** | 5 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE: 3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 **3** 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 **7** 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2, UNT Muddy Creek

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | | |
| SCORE: 12 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | | |
| SCORE: 6 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | | |
| SCORE: 7 (LB) | Left Bank | 10 | 9 | | | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | |
| SCORE: 7 (RB) | Right Bank | 10 | 9 | | | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | | |
| SCORE: 4 (LB) | Left Bank | 10 | 9 | | | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | |
| SCORE: 4 (RB) | Right Bank | 10 | 9 | | | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | | |
| SCORE: 1 (LB) | Left Bank | 10 | 9 | | | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | |
| SCORE: 10 (RB) | Right Bank | 10 | 9 | | | 8 | 7 | 6 | | | 5 | 4 | 3 | | | 2 | 1 | 0 | | | | |

TOTAL SCORE: 80

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: Big Creek | LOCATION: Stream 11 |
| STREAM WDTH (FT): 30 DEPTH (FT): 5 | PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |

| | | |
|---|---|---|
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category: Optimal | Suboptimal | Marginal | Poor |
|---|---|---|---|---|
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| SCORE: 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| SCORE: 4 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE: 5 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2, Big Creek (Stream 11)

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | |
| SCORE: 11 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | |
| SCORE: 3 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | |
| SCORE: 6 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 6 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | |
| SCORE: 4 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 4 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | |
| SCORE: 5 (LB) | Left Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |
| SCORE: 2 (RB) | Right Bank | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | | | | | | | | | | |

TOTAL SCORE: 69

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 1

| | |
|---|---|
| STREAM NAME: Hurricane Creek | LOCATION: Stream 12 |
| STREAM WDTH (FT): 45 DEPTH (FT): 6 | PERENNIAL ☒ INTERMITTENT ☐ EPHEMERAL ☐ |
| STATION #: RIVERMILE: | COUNTY: Tippah STATE: MS |
| LAT: LONG: | RIVER BASIN: |
| CLIENT: Gresham Smith | PROJECT NO. MS10-001 |
| INVESTIGATORS/CREW: R. Storm, J. Weber | |

| | | |
|---|---|---|
| FORM COMPLETED BY: R. Storm | DATE: 10/3/11 – 10/7/11<br>TIME: | REASON FOR SURVEY:<br>Ecology Survey |

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category: Optimal | Suboptimal | Marginal | Poor |
|---|---|---|---|---|
| 1. Epifaunal Substrate/ Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient. | 40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed. | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking. |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 **7** 6 | 5 4 3 2 1 0 |
| 2. Embeddedness | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment. | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment. | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment. |
| SCORE: 3 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 **3** 2 1 0 |
| 3. Velocity/Depth Regime | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.) | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes). | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low). | Dominated by 1 velocity/depth regime (usually slow-deep). |
| SCORE: 7 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 8 **7** 6 | 5 4 3 2 1 0 |
| 4. Sediment Deposition | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition. | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools. | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
| SCORE: 8 | 20 19 18 17 16 | 15 14 13 12 11 | 10 9 **8** 7 6 | 5 4 3 2 1 0 |
| 5. Channel Flow Status | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed. | Water fills > 75% of the available channel; or <25% of channel substrate is exposed. | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed. | Very little water in channel and mostly present as standing pools. |
| SCORE: 17 | 20 19 18 **17** 16 | 15 14 13 12 11 | 10 9 8 7 6 | 5 4 3 2 1 0 |

HABITAT ASSESSMENT FIELD DATA SHEET — HIGH GRADIENT STREAMS, PAGE 2

Parameters to be evaluated in sampling reach

| Habitat Parameter | Condition Category | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Optimal | | | | | Suboptimal | | | | | Marginal | | | | | Poor | | | | | | |
| 6. Channel Alteration | Channelization or dredging absent or minimal; stream with normal pattern. | | | | | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present. | | | | | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted. | | | | | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely. | | | | | | |
| SCORE: 12 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | **12** | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 | |
| 7. Frequency of Riffles (or bends) | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream < 7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important. | | | | | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15. | | | | | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25. | | | | | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ration of > 25. | | | | | | |
| SCORE: 6 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | **6** | 5 | 4 | 3 | 2 | 1 | 0 | |
| 8. Bank Stability (score each bank) Note: determine left or right side by facing downstream. | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. < 5% of bank affected. | | | | | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. | | | | | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods. | | | | | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars. | | | | | | |
| SCORE: 6 (LB) | Left Bank | | 10 | | 9 | 8 | | 7 | | **6** | 5 | | 4 | | 3 | 2 | | 1 | | 0 | | |
| SCORE: 6 (RB) | Right Bank | | 10 | | 9 | 8 | | 7 | | **6** | 5 | | 4 | | 3 | 2 | | 1 | | 0 | | |
| 9. Vegetative Protection (score each bank) | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. | | | | | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. | | | | | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. | | | | | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. | | | | | | |
| SCORE: 8 (LB) | Left Bank | | 10 | | 9 | **8** | | 7 | | 6 | 5 | | 4 | | 3 | 2 | | 1 | | 0 | | |
| SCORE: 8 (RB) | Right Bank | | 10 | | 9 | **8** | | 7 | | 6 | 5 | | 4 | | 3 | 2 | | 1 | | 0 | | |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone) | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone. | | | | | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally. | | | | | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal. | | | | | Width of riparian zone <6 meters: little or no riparian vegetation due to human activities. | | | | | | |
| SCORE: 5 (LB) | Left Bank | | 10 | | 9 | 8 | | 7 | | 6 | **5** | | 4 | | 3 | 2 | | 1 | | 0 | | |
| SCORE: 2 (RB) | Right Bank | | 10 | | 9 | 8 | | 7 | | 6 | 5 | | 4 | | 3 | **2** | | 1 | | 0 | | |

TOTAL SCORE: 95

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coast Plain Region

Project/Site: SR-15, Wetland 1 City/County: Walnut/Tippah County Sampling Date: 10/4/11

Applicant/Owner: MDOT State: MS Sampling Point: Plot 1

Investigator(s): R. Storm, J. Weber Section, Township, Range:

Landform (hillslope, terrace, etc.): Bottom Local Relief (concave, convex, none): Concave Slope (%): <2%

Subregion (LRR or MLRA): LRR P Lat: 34.938078 Long: -88.716524 Datum:

Soil Map Unit Name: NWI or WWI Classification: PEM

Are climactic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in remarks.)

Are vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No

Hydric Soil Present? Yes X No

Wetland Hydrology Present? Yes X No

**Is the sampled area within a wetland?** **Yes X No**

Remarks:

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (B1)
- X Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes No X Depth (inches):

Water Table Present? Yes No X Depth (inches):

Saturation Present: Yes No X Depth (inches): **Wetland Hydrology Present? Yes X No**

(includes capillary fringe)

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil moist. Hydrology indicators weak.

**VEGETATION – Use scientific names of plants.** Sampling Point: Wetland 1 Plot 1

| Tree Stratum (Plot Size: 30 ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 8. | | | |
| | = Total Cover | | |
| **Sapling Stratum (Plot size: 30 )** | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | = Total Cover | | |
| **Shrub Stratum (Plot size: 15 )** | | | |
| 1. *Cephalanthus occidentalis* | 3 | X | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 3 = Total Cover | | |
| **Herb Stratum (Plot size: 5 )** | | | |
| 1. *Dichanthelium scoparium* | 65 | X | FACW |
| 2. *Carex* sp. | 10 | | FACW |
| 3. *Juncus effuses* | 5 | | FACW |
| 4. *Eupatorium perfoliatum* | 10 | | FACW |
| 5. *Verbena simplex* | 5 | | NI |
| 6. *Cyperus strigosus* | 5 | | FACW |
| | 100 = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30 )** | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 103 = Total Cover | | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 3 | x 1 = | 3 |
| FACW Species | 95 | x 2 = | 190 |
| FAC Species | | x 3 = | |
| FACU Species | | x 4 = | |
| UPL Species | | x 5 = | |
| Column Totals: | 98 (A) | | 193 (B) |

Prevalence Index = B/A = 1.96

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

X Prevalence Test is $\leq 3.0^1$

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**

**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

Sampling Point: Wetland 1 Plot 1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth | Matrix | | Redox Features | | | | Remarks |
|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture |
| 0-3 | 10 YR 4/3 | 90 | -- | | | | Clay |
| 3-7 | 10 YR 5/2/3 | 60 | 5 YR 4/6 | 20 | | | Clay |
| 7-14 | 10 YR 5/2/3 | 60 | 5 YR 4/6 | 20 | | | Sandy clay loam |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A11)
- ___ Coast Prairie Redox (A16)**(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR 0)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19)**(LRR P,S,T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 1503B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

**Indicators for Problematic Hydric Soils[3]:**

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches):

**Hydric Soil Present?** **Yes** **X** **No** _____

Remarks:

Hydric soil not present, but close. Mottles and oxidized rhizospheres.

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coast Plain Region

Project/Site: SR-15, Wetland 2 City/County: Walnut/Tippah County Sampling Date: 10/4/11

Applicant/Owner: MDOT State: MS Sampling Point: Plot 2X

Investigator(s): R. Storm, J. Weber Section, Township, Range:

Landform (hillslope, terrace, etc.): Bottom Local Relief (concave, convex, none): Concave Slope (%): <2%

Subregion (LRR or MLRA): LRR P Lat: 34.945213 Long: -88.916021 Datum:

Soil Map Unit Name: NWI or WWI Classification:

Are climactic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in remarks.)

Are vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No

Hydric Soil Present? Yes X No

Wetland Hydrology Present? Yes X No

**Is the sampled area within a wetland?** **Yes X No**

Remarks:
Soil and hydrology is weak. Some obligate plants.

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (B1)
- X Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes No X Depth (inches):

Water Table Present? Yes No X Depth (inches):

Saturation Present: Yes No X Depth (inches): **Wetland Hydrology Present? Yes X No**

(includes capillary fringe)

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Only a few oxidized roots to indicate hydrology.

**VEGETATION – Use scientific names of plants.** Sampling Point: Wetland 2, Plot 2

| Tree Stratum (Plot Size: 30 ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 8. | | | |
| | = Total Cover | | |
| **Sapling Stratum (Plot size: 30 )** | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | = Total Cover | | |
| **Shrub Stratum (Plot size: 15 )** | | | |
| 1. *Pinus taeda* | 20 | X | FAC |
| 2. *Fraxinus pennsylvanica* | 5 | | FACW |
| 3. *Ulmus alata* | 5 | | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | 30 | = Total Cover | |
| **Herb Stratum (Plot size: 15 )** | | | |
| 1. *Rubus* sp. | 5 | | FAC |
| 2. *Juncus effuses* | 40 | X | FACW |
| 3. *Dichanthelium scoparium* | 40 | X | FACW |
| 4. *Solidago* sp. | 5 | | -- |
| 5. | | | |
| 6. | | | |
| | 50 | = Total Cover | |
| **Woody Vine Stratum (Plot size: 30 )** | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | | = Total Cover | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 0 | x 1 = | 0 |
| FACW Species | 85 | x 2 = | 170 |
| FAC Species | 25 | x 3 = | 75 |
| FACU Species | 5 | x 4 = | 20 |
| UPL Species | | x 5 = | |
| Column Totals: | 115 (A) | | 265 (B) |

Prevalence Index = B/A = 2.3

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

X Prevalence Test is $\leq 3.0^1$

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**

**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet)

## SOIL

Sampling Point: Wetland 2, Plot 2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth | Matrix | | Redox Features | | | | Remarks |
|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture |
| 0-10 | 10 YR 5/2/3 | 80 | 10 YR 4/6 | 20 | C | M | Sandy clay |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A11)
- ___ Coast Prairie Redox (A16)**(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR 0)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19)**(LRR P,S,T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 1503B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

**Indicators for Problematic Hydric Soils[3]:**

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches):

**Hydric Soil Present?** **Yes** X **No** ___

Remarks:

Hydric soil indicators very weak.

## WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coast Plain Region

Project/Site: SR-15, Wetland 3 City/County: Walnut/Tippah County Sampling Date: 10/4/11

Applicant/Owner: MDOT State: MS Sampling Point: Plot 3

Investigator(s): R. Storm, J. Weber Section, Township, Range:

Landform (hillslope, terrace, etc.): Bottom Local Relief (concave, convex, none): Concave Slope (%): <2%

Subregion (LRR or MLRA): LRR P Lat: 34.961433 Long: -88.901839 Datum:

Soil Map Unit Name: NWI or WWI Classification:

Are climactic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in remarks.)

Are vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes X No ____

Wetland Hydrology Present? Yes X No ____

**Is the sampled area within a wetland?** **Yes X No ____**

Remarks:
Small isolated herbaceous wetland.

### HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15) **(LRR U)**
- ____ Hydrogen Sulfide Odor (B1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present: Yes ____ No X Depth (inches): ____ **Wetland Hydrology Present? Yes ____ No ____**

(includes capillary fringe)

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Only one primary indicator.

**VEGETATION – Use scientific names of plants.** Sampling Point: Wetland 3, Plot 3

| Tree Stratum (Plot Size: 30 ) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 8. | | | |
| | = Total Cover | | |
| **Sapling Stratum (Plot size: 30 )** | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | = Total Cover | | |
| **Shrub Stratum (Plot size: 15 )** | | | |
| 1. *Salix nigra* | 2 | X | OBL |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| | = Total Cover | | |
| **Herb Stratum (Plot size: 10 )** | | | |
| 1. *Schedonorus phoenix* | 40 | X | FAC |
| 2. *Juncus effusus* | 20 | X | FACW |
| 3. *Campsis radicans* | 15 | | FAC |
| 4. *Echinocloa crusgalli* | 15 | | FACW |
| 5. *Vernonia gigantean* | 2 | | FAC |
| 6. | | | |
| | 92 = Total Cover | | |
| **Woody Vine Stratum (Plot size: 30 )** | | | |
| 1. None | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | = Total Cover | | |

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL Species | 2 | x 1 = | 2 |
| FACW Species | 35 | x 2 = | 70 |
| FAC Species | 57 | x 3 = | 171 |
| FACU Species | | x 4 = | |
| UPL Species | | x 5 = | |
| Column Totals: | 94 (A) | | 243 (B) |

Prevalence Index = B/A = 2.6

**Hydrophytic Vegetation Indicators:**

X Dominance Test is >50%

X Prevalence Test is $\leq 3.0^1$

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Four Vegetation Strata:**

**Tree** – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet)
Along edges in broomsedge. Scattered black willows.

## SOIL

Sampling Point: Wetland 3, Plot 3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth | Matrix | | Redox Features | | | | Remarks |
|---|---|---|---|---|---|---|---|
| (inches) | Color (moist) | % | Color (moist) | % | Type[1] | Loc[2] | Texture |
| 0-2.5 | 10 YR 4/2 | 80 | 10 YR 5/8 | 10 | C | M | Sandy clay |
| 2.5-14 | 10 YR 5/2/3 | 80 | 10 YR 5/6 | 15 | L | M | Sandy clay |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

**Hydric Soil Indicators:**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A11)
- ___ Coast Prairie Redox (A16)**(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR 0)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(Outside MLRA 150A, B)**
- ___ Piedmont Floodplain Soils (F19)**(LRR P,S,T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 1503B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

**Restrictive Layer (if observed):**

Type: _____

Depth (inches):

**Hydric Soil Present?** **Yes** _____ **No** _____

Remarks:

The soil is weakly hydric. Concretions are bright but maxtrix's 5/2/3.

*Stream 1*

*Stream 3, Dry Creek*

*Stream 3, Dry Creek*

*Stream 3, South of US 72*

*Stream 4, South of US 72*

*Stream 5*

*Stream 5, upstream view*

*Stream 6, downstream view*

*Stream 7, pond outlet channel*

*Stream 7, pond outlet channel through pine woods*

*Stream 8 and Stream 9, upstream view of confluence, kudzu covers Stream 9*

*Stream 10, ephemeral*

*Stream 11, Dry Creek*

*Stream 12*

*Stream 12, Hurricane Creek*

*Stream 13, parallel to Hurricane Creek on west side of SR 15*

*Field Ditch 1*

*Field Ditch 2 in cotton field*

*Field Ditch 3*

*Field Ditch 4, swale in hay field*

*Field Ditch 5*

*Wetland 1, buttonbush shrub*

*Wetland 1, wet meadow*

*Wetland 2, wetland in pine plantation*

*Wetland 2, wetland in pine plantation*

*Wetland 3*

*Pond 1*

*Pond 2*

*Pond 3*

*Pond 4*

*Pond 5*

*Pond 6*

*Pond 7*

APPENDIX C – MISSISSIPPI NATURAL HERITAGE PROGRAM CORRESPONDENCE
AND
US FISH AND WILDLIFE CORRESPONDENCE

MISSISSIPPI
DEPARTMENT OF WILDLIFE, FISHERIES, AND PARKS

Sam Polles, Ph.D.
Executive Director

October 4, 2011

James Storm
Third Rock Consultants, LLC
2526 Regency Road
Suite 180
Lexington, KY 40503

Re: SR15 from CR312 to the TN State Line
Development / Road
Tippah County, Mississippi

**R# 8617**

To Whom It May Concern,

In response to your request for information dated September 27, 2011, we have searched our database for occurrences of state or federally listed species and species of special concern that occur within 2 miles of the site of the proposed project. Please find our concerns and recommendations below.

The following species of concern have been documented within 2 miles of the proposed project area:

| SCIENTIFIC NAME | COMMON NAME | FED | STATE | STATE RANK |
|---|---|---|---|---|
| | | | | |
| *Cyprinella whipplei* | Steelcolor Shiner | | | S2 |
| *Agalinis oligophylla* | Ridge-Stem False-Foxglove | | | S2 |

State Rank
S1 — Critically imperiled in Mississippi because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
S2 — Imperiled in Mississippi because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation.
S3 — Rare or uncommon in Mississippi (on the order of 21 to 100 occurrences).
State and Federal Status

LE Endangered — A species which is in danger of extinction throughout all or a significant portion of its range.
LT Threatened — A species likely to become endangered in foreseeable future throughout all or a significant portion of its range.

**Based on information provided, we conclude that if best management practices are properly implemented, monitored, and maintained (particularly measures to prevent, or at least, minimize negative impacts to water quality), the proposed project likely poses no threat to listed species or their habitats.**

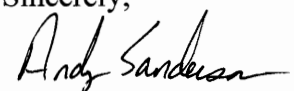
**Recommendations:**

We recommend that best management practices be properly implemented, monitored, and maintained for compliance, specifically measures that will prevent suspended silt and contaminants from leaving the site in stormwater run-off as this may negatively affect water quality and habitat conditions within nearby streams and waterbodies.

In addition, portions of this project site are underlain by hydric soils and may be designated wetlands. If this project is approved, we ask that serious consideration be given to the cumulative impacts of wetland/stream disturbance and elimination, and that appropriate in-kind mitigation be provided.

Please feel free to contact us if we can provide any additional information, resources, or assistance that will help minimize negative impacts to the species and/or ecological communities identified in this review. We are happy to work with you to ensure that our state's precious natural heritage is conserved and preserved for future Mississippians.

Sincerely,



Andy Sanderson, Ecologist
Mississippi Natural Heritage Program
(601) 576-6049

THIRD ROCK
WWW.THIRDROCKCONSULTANTS.COM

September 27, 2011

RECEIVED
By MS Field Office

Steve Ricks
US Fish & Wildlife Services
Ecological Services
6578 Dogwood View Parkway, Suite A
Jackson, MS 39213

Re: *SR 15 Environmental Assessment, Tippah County, Mississippi*

Dear Mr. Ricks:

Third Rock Consultants LLC (Third Rock), as a subconsultant to Gresham Smith & Partners (GS&P), will prepare the ecology screening and technical studies as part of the environmental assessment (EA) for the location and improvements of SR 15 in Tippah County. The project begins approximately 2.4 miles south of US 72 in the vicinity of CR 312 and ends at the Tennessee state line.

I am requesting information that USFWS may have regarding endangered, threatened, or rare species listed for the project area. I am also interested in information on identified natural areas and unique, sensitive, or critical wildlife habitat in the project area.

Enclosed are 3 maps of the project area. Please let me know if you need additional information.

Very truly yours,

James Storm
jstorm@thirdrockconsultants.com
2526 Regency Rd | Ste 180 |
Lexington, KY 40503 | 859.977.2000
Mobile 859.358.5958

**No federally listed endangered, threatened or candidate species present**

**U.S. Fish and Wildlife Service**
**Mississippi Field Office**
**6578 Dogwood View Pkwy**
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